

City of Detroit
SPECIAL PROVISION
FOR
HAND SPRAYED WATERBORNE PAVEMENT MARKINGS

1 of 4

TED: JF

03-19-13

I. Description. Prepare pavement surfaces and apply by hand wand retro-reflectorized white or selectively colored waterborne pavement markings including legends, symbols, crosswalks, stop bars and miscellaneous lines. Complete this work according to this special provision, the project plans, the 2012 Michigan Department of Transportation Standard Specifications for Construction, and as directed by the Engineer.

II. Materials. Select waterborne pavement marking material from the Qualified Products List (QPL). Use standard glass beads as called for in Section 920 of the Standard Specifications for Construction **except as noted in this provision:**

A. General:

1. All material used in the formulation of the pavement marking paint shall meet the requirements herein specified. Any materials not specifically covered shall meet the approval of the engineer.

B. Composition Requirements:

1. The pavement marking paint shall be a ready-mixed, one component, water-borne traffic quality paint, of the correct color, to be applied to either asphaltic or Portland cement concrete pavement. The composition of the paint shall be determined by the manufacturer. It will be the manufacturer's responsibility to produce a pigmented water-borne paint containing all the necessary co-solvents, dispersant, wetting agents, preservatives and all other additives, so that the paint shall retain its viscosity, stability and all of the properties as specified herein. The manufacturer shall certify that the product does not contain mercury, hexavalent chromium, toluene, chlorinated solvents, hydrolysable chlorine derivatives, ethylene-based glycol ethers and their acetates, nor any carcinogen, as defined in 29 CFR 1910.1200. The certification shall indicate a lead content not exceeding 0.06 percent by weight of the dry film, and the test for chromium content shall be negative.

2. **No glass beads will be allowed in the pavement marking paint. Glass beads will be applied after the paint has been applied.**

- C. Manufacturing Formulations: The manufacturer shall formulate the pavement marking paint in a consistent manner and notify the engineer of any change of formulation. The formulation of the paint shall be determined by the manufacturer. It will be the manufacturer's responsibility to formulate paint which will meet the quantitative and qualitative requirements of this specification. Any change in the formulation of the paint must be approved by the CITY and Michigan Department of Transportation.

City of Detroit
SPECIAL PROVISION
FOR
HAND SPRAYED WATERBORNE PAVEMENT MARKINGS

2 of 4

TED: JF

03-19-13

Rev: 02/14/08 PAINTED PAVEMENT MARKINGS 02520 - 2 D. Quantitative Requirements of Mixed Paints:	<u>White</u>	<u>Yellow</u>
Pigment: Percent by weight, ASTM D 3723, Allowable variation from qualifying sample	± 2.0	± 2.0
Non-Volatile Content: Percent by weight, ASTM D 2369, allowable variation from qualifying sample	± 2.0	± 2.0
Viscosity: Krebs Units at 77 ± 1° F, ASTM D 562	70 – 85	70 – 85
Weight per Gallon: Pounds per gallon 77 ± 1° F, ASTM D 1475P, allowable variation from qualifying sample	± 0.3	± 0.3
Vehicle Composition: Vehicle Infrared Spectra, ASTM D 2621, allowable variation from qualifying sample	None	None
pH: ASTM E 70, Allowable variation from qualifying sample	± 1.0	± 1.0
Fineness of Dispersion: HEGMAN, minimum, ASTM D 1210	3.0	3.0
Volatile Organic Compounds: Pounds per gallon of paint, maximum, ASTM D 3960 according to 7.1.2.	2.1	2.1
Flash Point: Degrees F., minimum, ASTM d 93, Method A	100	100
Dry Time to No Pick Up: With no beads: minutes, maximum, ASTM D 711	10	10
Dry Through Time: Minutes, ASTM D 1640 except no thumb pressure is used when thumb is rotated 90° on paint film	20	20
Flexibility: TT-P-1952D	Pass	Pass

The material must be shipped to the job site in sturdy containers plainly marked with the Manufacturer's name and address, the color of the material, date of manufacture and batch number.

City of Detroit
SPECIAL PROVISION
FOR
HAND SPRAYED WATERBORNE PAVEMENT MARKINGS

3 of 4

TED: JF

03-19-13

Provide certification to the Engineer from the waterborne manufacturer documenting the Contractor's qualifications to place the product in a manner acceptable to the manufacturer and in compliance with the provisions of this specification.

Provide technical data from the manufacturer regarding material type and application rate to the Engineer prior to starting work.

III. Construction.

1. **Placement.** Place waterborne materials and beads according to this specification and the waterborne manufacturer's requirements. Applied markings shall be sharp and well defined and shall provide uniform application of beads.
2. **Surface Preparation.** Surface preparation requirements are dependent on surface conditions. Notes A through E apply to the application of **recessed lines, non-recessed lines and special makings**, as noted:
 - A. **New hot mix asphalt (HMA)** - "New" HMA has no oil drips, residue, debris, or temporary or permanent markings. **Preparation required: Non-recessed lines and special markings-** Scarify the proposed marking area using non-milling grinding teeth or shot blasting.
 - B. **New Portland cement concrete (PCC)** - "New" PCC has no oil drips, residue, and debris, temporary or permanent markings. **Preparation required: Non-recessed lines and special markings-** Remove curing compound; to be paid for separately as Removing Curing Compound.
 - C. **Existing HMA or PCC surface** - There may be oil drip areas and/or debris, but no existing markings. **Preparation required: Non-recessed lines and special markings-** Scarify the proposed marking area using non-milling grinding teeth or shot blasting.
 - D. **Existing HMA or PCC surface with existing non-waterborne marking** - There may be oil drips and debris. There will be an existing non-waterborne marking. **Preparation required: Non-recessed lines and special markings-** Completely remove non-waterborne markings; to be paid for as Removal of Special Markings or Removal of Longitudinal Lines.
 - E. **Existing surface with existing waterborne marking-HMA or PCC** - There may be oil drip areas and or debris where there is an existing waterborne marking. **Preparation required: Non-recessed lines and special markings:** Scarify the proposed marking area using non-milling grinding teeth or shot blast or clean chemically per manufacturer's recommendations.

City of Detroit
SPECIAL PROVISION
FOR
HAND SPRAYED WATERBORNE PAVEMENT MARKINGS

4 of 4

TED: JF

03-19-13

Occasionally an existing waterborne marking may require complete removal. When the Engineer decides complete removal is required, it will be paid for as Removal of Special Markings or Removal of Longitudinal Lines.

Conduct grinding, scarifying, sandblasting, shot blasting, or other operations in such a manner that the finished pavement surface is not damaged and does not exhibit a pattern that will mislead or misdirect the motorist. Use vacuum-type equipment or equivalent to collect and contain debris generated by this operation.

When surface preparation is complete, broom the pavement surface, and follow with compressed air cleaning to remove all residue and debris resulting from the preparation work. Control and minimize airborne dust and similar debris generated by surface preparation and cleanup to prevent a hazard to motor vehicle operation or nuisance to adjacent property.

Do not damage transverse and longitudinal joint sealers on HMA and PCC surfaces when performing removal and cleaning work.

3. **Temperature Limitatlons.** Use the temperature limitations recommended by the waterborne Manufacturer. Document the temperature at the start of each day of marking operation and at any other time deemed necessary by the manufacturer or the Engineer.

IV. Delayed Acceptance. See special provision "03S811 (B)", from the Michigan Department of Transportation for specific regulations.

V. Measurement and Payment. The completed work as described will be paid for at contract unit price for the following contract items (pay items):

Contract Item (Pay Item)	Pay Unit
"Pavt Mrkg, Waterborne, Bike Sym and Arrow, White".....	Each
"Pavt Mrkg, Waterborne, Bike Sharrow Sym	Each

The contract unit price for each of these items includes all labor, material, equipment, and traffic control. Payment also includes the costs associated with corrective action as referred to in section (IV) of this special provision. Removing curing compound or existing pavement markings will be paid for separately as described in section (III.2) of this special provision.

Certified Payrolls

Certified Payrolls

Weekly certified payrolls covering the contractor's and subcontractor's workforce shall be submitted to the engineer on all contracts. Certified payrolls are required for all covered laborer and mechanic work regardless of the contracting method used such as subcontract, purchase order, invoice, or other contractual arrangement. Certified payroll information may be submitted in any format provided that all information requested on form **WH-347** is included, and the compliance statement has original signatures. This is a USDOL form and a link is available on the MDOT Web site at <http://mdotwasl.mdot.state.mi.us/public/webforms/index.cfm>.

Submittal Requirements

The first certified payroll is to be received by the engineer within three weeks from the start of the work for the prime contractor and/or subcontractor(s). The three week period is to allow for processing and review of the certified payrolls by the prime contractor. The first pay estimate can be made prior to the submission of the first certified payrolls. The three week grace period allows the first estimate to be paid in good faith assuming the contractor and subcontractor(s) will submit certified payrolls in a timely manner. Subsequent certified payrolls shall be submitted on a weekly basis thereafter. In certain circumstances, the time frame for submittal of the first payroll is two weeks for shorter duration projects as discussed at the end of the section titled "Notice of Delinquent Certified Payrolls". Certified payroll submissions not meeting the above time requirements will be considered delinquent.

Notice of Delinquent Certified Payroll

When weekly certified payrolls are delinquent as defined above, the engineer is to provide the prime contractor a first written notice of delinquent certified payrolls by certified mail or other method which establishes the date the first notice was received by the prime contractor, with a copy by regular mail to the offending subcontractor. The notice informs the contractor that payment for work is suspended as of the date the certified payrolls became delinquent for the work items of the offending contractor(s). When the pay estimate is generated, the statement "Items withheld-Delinquent payrolls" should be entered in the comments area. In addition, the notice is to state that if certified payrolls remain delinquent after 30 calendar days from receipt of the first notice, noncompliance damages will be assessed retroactive to the date the contractor received the first notice. The damages will be assessed on a calendar day basis until complete and accurate certified payrolls are submitted and are current.

If the certified payrolls continue to be delinquent after 30 calendar days from receipt of the first notice by the prime contractor, the engineer is to implement the actions from the first notice. Concurrently, the engineer is to send the prime contractor a second written notice of delinquent certified payrolls by certified mail or other method which establishes the date the second notice was received by the prime contractor, with a copy by regular mail to the offending subcontractor. The City Engineer should also receive a copy by regular mail. The notice is to state if the certified payrolls remain delinquent for 30 days from the receipt of the second notice, the engineer will rescind all previous payments for work completed by the offending contractor(s). In addition, the engineer will complete interim Contractor Performance Evaluations for the offending contractor. If certified payrolls have not been received from the contractor after 30 calendar days from receipt of the second notification, the engineer is to implement the actions from the second notice. In all circumstances, the withholding of payments, assessment of noncompliance damages, and rescinded payments are to continue until all delinquent certified payrolls are current, complete and correct.

Certified Payrolls

The notification sequence previously described would be as follows:

Initiate Notice	Notice Sequence	Contractor Notice of Action	Allotted Time For Response/ Resolution	If No Response/ Resolution
First payroll has not been received within 3 weeks	First Notice (See Note 1)	Payment is being withheld for offending contractor's work items. Non-payment will continue until complete and accurate payrolls are received. Intent to assess non-compliance damages until all payrolls are complete, accurate and current (See Notes 2 and 3)	30 days from receipt of first notice by the the first prime contractor	Implement actions from the first notice. Send second notice
Payroll remains delinquent 30 days after first notice received by prime contractor	Second Notice (See Note 1)	Intent to rescind all prior payment for the offending contractor's work items. Intent to submit interim Contractor Performance Evaluation(s) for the offending contractor(s). (See Note 2)	30 days from receipt of second notice by the prime contractor	Implement actions from the second notice

Note 1: Notice is to be signed by the engineer and delivered by certified mail or other method which establishes the date received by the prime contractor. The City Engineer is to be copied on the first notice to the prime contractor. The City Engineer and the Director of DPW are to be copied on the second notice to the prime contractor.

Note 2: Prior to generating an estimate on which payment is being withheld or deducted, the following statement will be entered in the comment box: "Items withheld - Delinquent payroll".

Note 3: See Table 1 Schedule of Non-Compliance Damages

Table 1 Schedule of Non-Compliance Damages

Contract/Subcontract/P.O./Invoice Amount	Non-compliance damages per calendar day
\$0 to 49,999	\$200
50,000 to 99,999	\$400
100,000 to 499,999	\$600
500,000 to 999,999	\$900
1,000,000 to 1,999,999	\$1,300
2,000,000 to 4,999,999	\$1,550
5,000,000 to 9,999,999	\$2,650
10,000,000 and above	\$3,000
Trucker	\$200

"Contract" amount if offending contractor is the prime contractor. "Subcontract/P.O./Invoice" amount if offending contractor is a subcontractor/vendor.

Certified Payrolls

Certified Payroll Status Record

The engineer is to maintain a current (updated weekly) log documenting the submittal status of certified payroll for each contract. The Certified Payroll Status Record (MDOT form 1954) is available for this purpose. The record is to show whether the contractor and/or subcontractor worked during the weekly period, and the date the certified payrolls were received from the prime contractor. In addition, the status record should document the date any notifications are sent to the prime contractor (via certified mail) of delinquencies and/or deficiencies with certified payrolls, and the dates when the revised/corrected certified payrolls were received. All certified payrolls are to be date stamped upon receipt from the prime contractor. The envelope in which the certified payrolls arrive should be attached to the payroll and saved as part of the project file records.

The certified payroll is to include the following information:

- The firm's name and address with the prime or subcontractor(s) identified.
- Payroll number, week ending, project location and contract ID (contract identification).
- The employee's full name and only the last four digits of their social security number. If a contractor or subcontractor submits certified payrolls with complete social security numbers, the engineer is not to take possession of the certified payrolls and will return them to the prime contractor. This is the only instance where certified payrolls are to be returned to the prime contractor. Failure by the contractor or subcontractor to submit certified payrolls with only the last four digits of the social security number shall not change the time frames for the consideration of delinquent and deficient certified payrolls and resulting actions by the engineer.
- Information identifying minority and female employees. The following ethnic code notation is to be used: Black (B), Hispanic (H), Native American Indian or Alaskan Eskimo (N/A), and Asian or Pacific Islander (A). For female use (F).
- The employee's classification and group number. (DBRA Laborer example: LABO0465-001, Group 1)
- Identification of trainees and apprentices, and program levels.
- The employees daily and weekly hours worked in each classification, including actual overtime worked.
- The total weekly hours worked on all jobs (prevailing and non-prevailing wage)
- The basic hourly rate, overtime rate (if applicable) and the method by which fringe benefits are paid (By checking Box(4)(a) approved programs, Box (4)(b) paid in cash, or a combination of the above methods with an explanation in Box (4)(c). If fringe benefits are paid to an approved plan, a detailed breakdown of the type of benefits and hourly dollar values must accompany the first certified payroll. In addition, plan administrator contact information shall be included. If there is a change to the fringe benefits payment after submittal of the first certified payroll, the fringe benefit information must be resubmitted. This information is to be used to verify the benefits being paid are "bona fide" and that the total compensation is in compliance with the required prevailing wage in the contract.
- The itemized deductions - miscellaneous itemized deductions must be explained on the certified payroll. (Space provided after paragraph (1) on the compliance statement)
- The gross job wages paid.
- The gross weekly wages paid for all jobs.
- The net weekly wages paid for all jobs.
- The compliance statement with original signature.

Certified Payrolls

Certified Payroll Review

The engineer is to closely review the certified payrolls from the prime contractor and subcontractor(s) that work on the project. Once it is established that a contractor/subcontractor is submitting complete and accurate certified payrolls, subsequent payrolls need to be spot checked during the remainder of the project for that contractor/subcontractor. The review should verify that the information described above is included on the certified payroll. Form 1952, Certified Payroll Review Checklist, is available on MDOT's forms Web site to assist in checking the payrolls for completeness. In addition, the total combination of base wage and fringe benefit reported on the certified payroll should be at least the prevailing wage contained in the wage rate decision in the contract or applicable addendum.

The review should compare information contained in the certified payrolls with information on the Inspectors Daily Reports (IDRs), including number of workers, hours worked, type of work and equipment on the job. It is important that the information is accurately recorded on the IDR each day so the proper review can be completed on the certified payrolls. The review should verify that the appropriate work classifications are reported to support the type of work being done on the job. For example, when concrete curb and gutter is being placed on a job covered by DBRA, there are finishers (cement masons, PLAS0016-016); laborers (form/line setters, LABO0-65-001, Group 6); laborers (unskilled laborers, LABO0465-001, Group 1); and operators (if using a" slipform curb machine, ENGI0324-006, Group 1); Compliance with prevailing wage requirements can only be determined once this comparison is made and any inconsistencies are brought to the attention of the contractor.

The rules for payment of overtime should be considered during the certified payroll review. Overtime rates are a combination of the base rate plus a premium amount. However, there are significant differences between overtime requirements when federal prevailing wages apply and when state prevailing wages apply.

Contracts with State Prevailing Wage:

- The time and one-half rate is stated in the prevailing wage schedule.
- The prevailing wage schedule for each contract will need to be referenced to determine the specific overtime payment requirements." In general, overtime is applied as follows:

For hours worked in excess of eight hours in a day.

For most classifications, the contractor may choose to work four tens (4 – 10 hour days) where overtime would be required after the tenth hour in a day and any time worked over forty hours in a week.

Some classifications require double time in certain situations.

The classification of iron worker has its own overtime requirements.

Deficient Certified Payroll

During the review, if the weekly certified payrolls are found to be incomplete, inaccurate, or inconsistent with the other project records, they are considered deficient. The engineer is to notify the prime contractor of the deficiencies in writing by certified mail or other method which establishes the date the notice is received by the contractor with a copy by regular mail to any subcontractor(s) that may be involved and the City Engineer.

The notice is to inform the contractor(s) that if the deficiencies are not corrected and revised certified payrolls are not received by the engineer in 30 calendar days from receipt of the notice by the prime contractor, payment for the offending contractor's work items will be withheld until corrected and revised payrolls are received by the engineer. In addition, the notice will state the intent to assess non-compliance damages retroactive to the date the prime received the first notice until all issues are resolved. The offending contractor is to submit revised certified payrolls correcting all deficiencies and/or errors through the prime contractor.

Certified Payrolls

If the issues are not resolved within 30 calendar days from the receipt of the first notice, the engineer will implement the action from the first notice. Concurrently, the engineer is to send a second notice to the prime contractor by certified mail or other method which establishes the date the notice was received by the contractor, with a copy by regular mail to any subcontractor(s) that may be involved. The second notice is to state that if corrected and revised certified payrolls are not received within 30 calendar days of the receipt of the second notice by the prime contractor, the engineer will rescind all payments for the offending contractor's work items previously paid. In addition, the notice is to inform the contractor the engineer will complete interim Contractor Performance Evaluations for the offending contractor. The City Engineer and the Director of Public Works are also to receive a copy of the second notice.

If the deficient certified payrolls are not corrected and revised certified payrolls received by the engineer within 30 calendar days of the second notice, the engineer is to implement the actions in the second notice and prepare the appropriate Contractor Performance Evaluations to report the continued non-compliance with prevailing wage requirements.

Assessment of non-compliance damages, withholding of payments, and rescinded payments will continue until all corrected and revised certified payrolls are received by the engineer.

The original certified payrolls submitted by the contractor/subcontractor(s) are to remain in the project files. Do **not** return certified payrolls to the contractor/subcontractor(s), except in the following circumstance. In the event the prime contractor submits certified payrolls containing full social security numbers, the engineer shall not take possession of the payrolls and shall return them to the prime contractor. This is the only instance where certified payrolls are to be returned to the prime contractor. This action is to protect the security of the employee social security numbers. Certified payrolls should **never** be altered, revised, corrected, amended or changed by project personnel (except for the date stamp).

The notification sequence previously described would be as follows:

Initiate Notice	Notice Sequence	Contractor Notice of Action	Allotted Time For Response/ Resolution	If No Response/ Resolution
Payroll deficiencies	First Notice (See Note 1)	Intent to withhold for offending contractor's work items. Intent to assess non-compliance damages from the date the first notice was received by the prime contractor (See Note 3)	30 days from receipt of first notice by the the prime contractor	Implement actions from the first notice. Send second notice
Payroll Issue not resolved 30 days after first notice	Second Notice (See Note 2)	Intent to rescind payment for all work items of offending contractor(s). Intent to submit interim Contractor Performance Evaluations	30 days from receipt of second notice by the prime contractor	Implement actions from the second notice

Note 1: Written notice is to be signed by the engineer and delivered by certified mail or other method which establishes the date the notice was received by the prime contractor. The offending subcontractor(s) and the City Engineer are to be copied by regular mail.

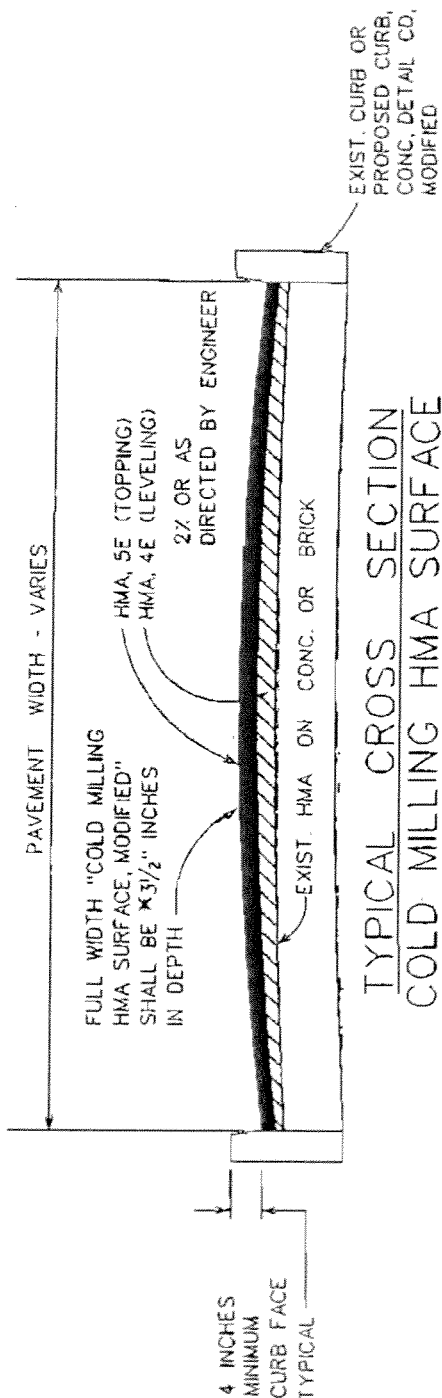
Note 2: Written notice is to be signed by the engineer and delivered by certified mail or other method which establishes the date the notice was received by the prime contractor. In addition, the offending subcontractor(s), the City Engineer, and the Director of the Department of Public Works are to be copied by regular mail.

Note 3: See Table 1 Schedule of Non-Compliance Damages

B					
A					
DESCRIPTION		Date	Q/M	Appl	Q/M
DRAWN BY K.S.M.		APPROVED			
PLACED BY		APPROVED			
CHECKED BY J.J.		APPROVED			

TYPICAL CROSS SECTION COLD MILLING HMA SURFACE AND RESURFACE

CITY OF DETROIT	
City Engineering Division	
Job No.	
Drwg. No.	
Date	JUNE, 09



TYPICAL CROSS SECTION COLD MILLING HMA SURFACE AND RESURFACING

NOTES:

1. THE CONTRACTOR SHALL PLACE ADDITIONAL HMA MIXTURE AT VARIOUS LOCATIONS WHERE NEEDED, IN ORDER TO MAKE A UNIFORM CROSS-SECTION. AN ADDITIONAL 10% OF HMA 5E HAS BEEN ESTIMATED TO PROVIDE MATERIAL TO RE-ESTABLISH THE PAVEMENT CROSS-SECTION AND FOR WEDGING AT MILLED STREET INTERSECTIONS.
2. "COLD MILLING HMA SURFACE, MODIFIED" SHALL APPLY ACROSS THE FULL PAVEMENT WIDTH AS SHOWN ON THE PLAN OR AS DIRECTED BY THE ENGINEER.

*3 IF EXISTING HMA OVERLAY IS LESS THAN 3 1/2", COLD MILL THE FULL DEPTH OR AS DIRECTED BY THE ENGINEER.

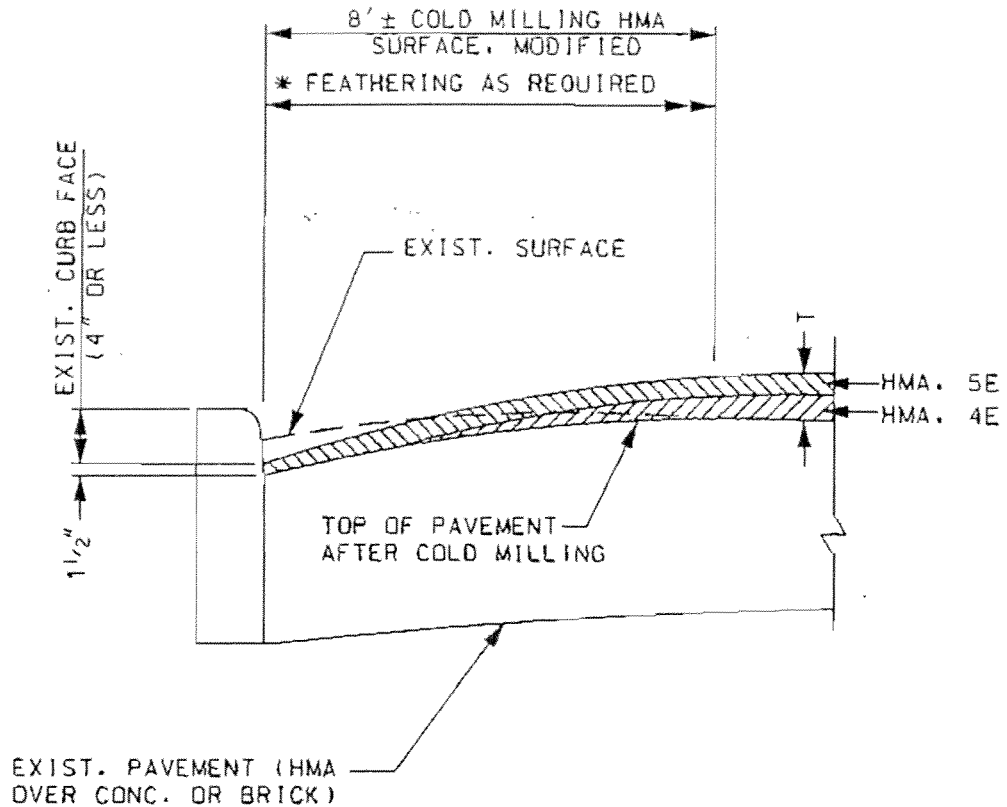
PROJECT SUMMARY:

COLD MILL 3 1/2 INCHES OF EXISTING HMA SURFACE AND REPLACE WITH 2 INCHES OF 4E HMA LEVELING COURSE MIXTURE WITH A YIELD OF 220 LBS PER SQUARE YARD AND 1 1/2 INCHES OF 5E HMA WEARING COURSE MIXTURE WITH A YIELD OF 165 LBS PER SQUARE YARD. THE PROJECT ALSO INCLUDES CONCRETE CURB, SIDEWALK, CURB RAMP'S, DRIVEWAY APPROACHES, DRAINAGE STRUCTURES, EXCAVATION, PAVEMENT REMOVAL, LAKE TIES, PAVEMENT MARKINGS AND MISCELLANEOUS CONSTRUCTION.

HMA APPLICATION ESTIMATE					
I.D. No.	Item	Rate Per syd	Est. Thick.	Performance Grade	Remarks
HMA, 5E	HMA mix. -5E	165 lb	1 1/2 INCHES	64-22	USE 5E FOR WEDGING
HMA, 4E	HMA mix. -4E	220 lb	2 INCHES	64-22	
HAND PATCHING	HMA mix. -5E	330 lb	3 INCHES	64-22	
HMA APPROACH, MODIFIED	HMA mix. 5E & HMAX mix. 4E	165 lb	1 1/2 INCHES	64-22	FOR RATE AND PG SEE HMA APPLICATION ESTIMATE
		220 lb	2 INCHES	64-22	
HMA SHOULDER, MODIFIED	HMA mix. -5E	330 lb	3 INCHES	64-22	

HMA Bond Coat at the rate of 0.05 to 0.15 Gal./Syd. -Included in the pay item "HMA, 4E"

Also Applies to HMA Approaches for Street Intersections



*"COLD MILLING HMA SURFACE MODIFIED", SO AS TO GET A 5 1/2" EXPOSED (VERTICAL) FACE OF CURB. FEATHER RESURFACING TO 1 1/2" THICKNESS AT THE CURB LEAVING A MINIMUM OF 4" EXPOSED CURB FACE.

T = THICKNESS OF HMA RESURFACING.

NOTE:

THIS DETAIL SHALL BE USED WHERE DIRECTED BY THE ENGINEER. TO OBTAIN ADDITIONAL CURB FACE EXPOSURE. (CURB FACE EXPOSURE AFTER RESURFACING SHALL BE A MINIMUM OF 4" THIS SHALL APPLY THROUGHOUT THE LENGTH OF THE PROJECT.)

B					
A					
DESCRIPTION		Drawn	Check	App'd	Date
REVISIONS					
DRAWN BY	K.S.M.	APPROVED			
TRACED BY		APPROVED			
CHECKED BY	J.J.	APPROVED			
		CITY ENGINEER			

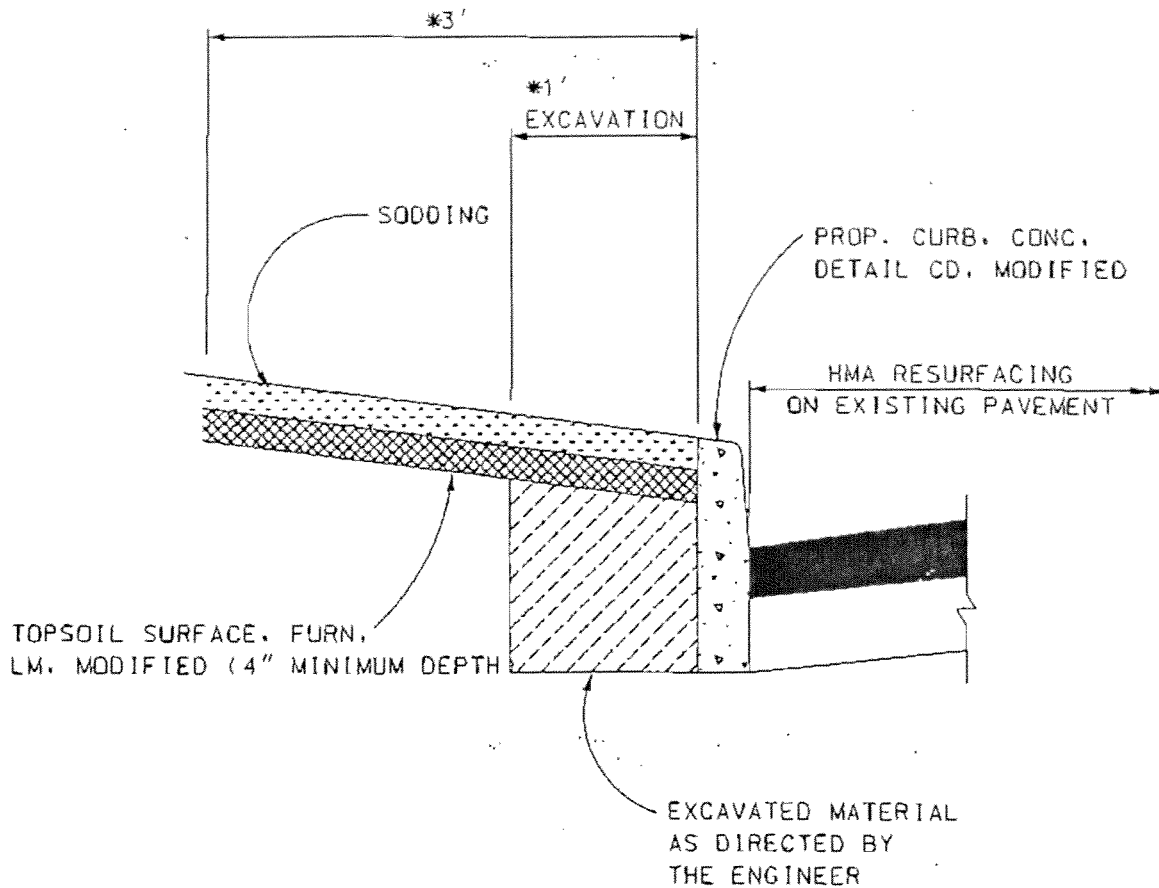
HMA FEATHERING DETAIL

CITY OF DETROIT
City Engineering
Division

Job No.

Drwg. No.

Date DEC. 06



NOTE:

* PAY LIMITS UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
THE ITEMS OF EXCAVATION AND SELECTED EXCAVATED MATERIAL
WILL BE INCLUDED IN THE PAY ITEM OF CURB, CONC., DETAIL CD,
MODIFIED

B					
A					
DESCRIPTION		Drawn	Check	App'd	Date
REVISIONS					
DRAWN BY	K.S.M.	APPROVED			
TRACED BY		APPROVED			
CHECKED BY	N.H.	APPROVED			
		CITY ENGINEER			

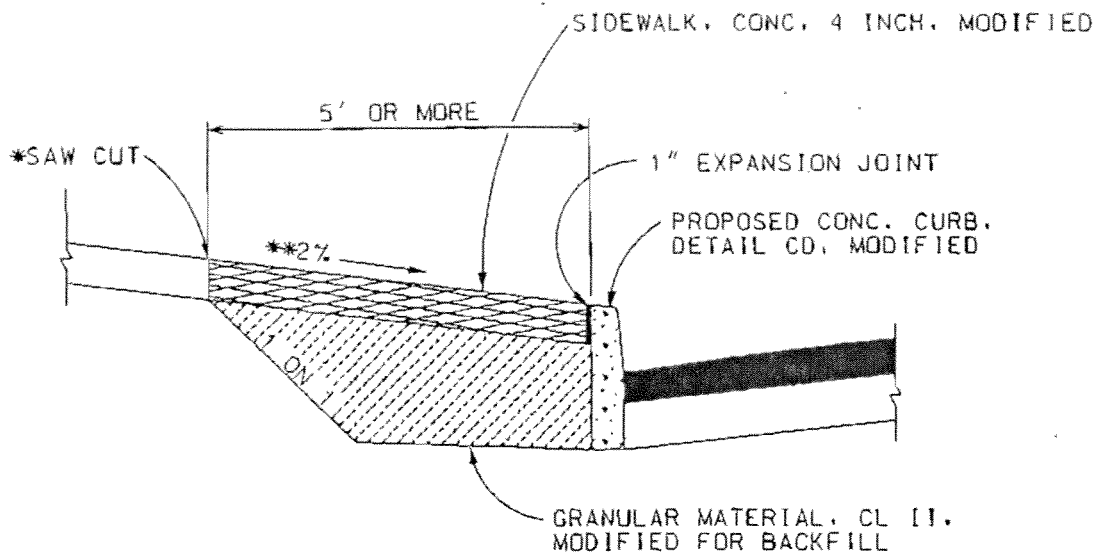
CURB REPLACEMENT AREAS WITH LAWN ABUTTING CURB

CITY OF DETROIT
City Engineering
Division

Job No.

Dwg. No.

Date JAN. 06



NOTE:

* IF SAWCUT IS LESS THAN 5' + FROM BACK OF CURB, CONCRETE CURB AND CONCRETE SIDEWALK SHALL BE CONSTRUCTED INTEGRALLY. THE ITEMS OF SAW CUT AND 1" EXPANSION JOINT WILL BE INCLUDED IN THE PAY ITEM OF SIDEWALK, CONC. 4 INCH OR 6 INCH, MODIFIED.

THE ITEM OF GRANULAR MATERIAL, CL II, MODIFIED UNDER CONCRETE SIDEWALK WILL BE PAID FOR WHEN CONCRETE SIDEWALK IS CONSTRUCTED IN THE BERM AREA BETWEEN THE CURB AND EXISTING SIDEWALK.

** SIDEWALK SLOPE SHALL BE 2% UNLESS OTHERWISE APPROVED BY THE ENGINEER.

B					
A	ADDED 2% S/W SLOPE	K.S.M.		J.J.	12/06
DESCRIPTION		Drawn	Chkd	App'd	Date
REVISIONS					
DRAWN BY		K.S.M.			
TRACED BY		APPROVED			
CHECKED BY		N.H.			
		APPROVED			
		CITY ENGINEER			

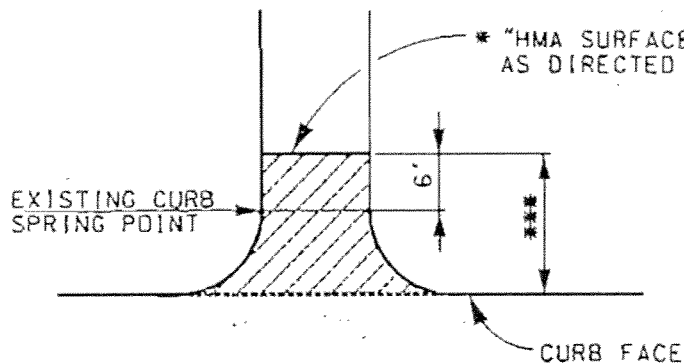
**CURB REPLACEMENT
AREAS WITH CONCRETE
SIDEWALK ABUTTING
CURB**

CITY OF DETROIT
City Engineering
Division

Job No.

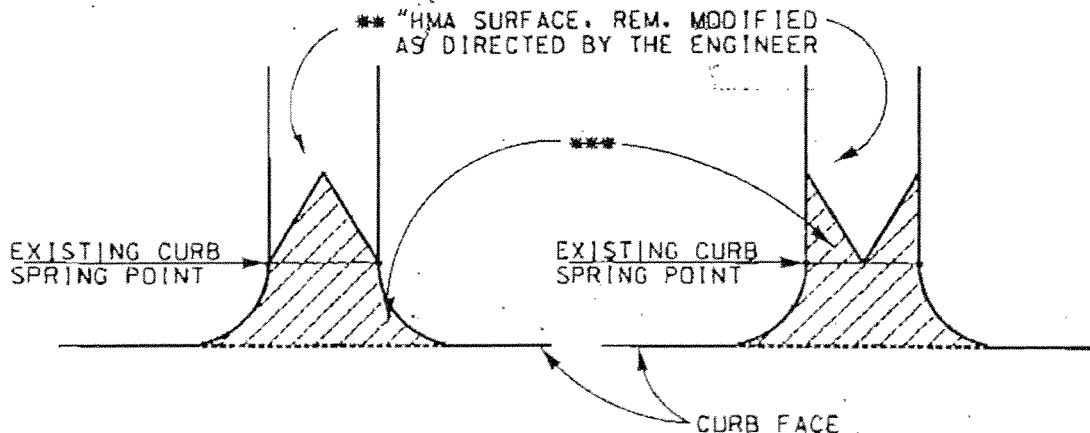
Drwg. No.

Date JAN. 06



*** RESURFACING STREET RETURNS SHALL BE PAID FOR AS "HMA APPROACH, MODIFIED"

* REMOVING HMA SURFACE AREA MAY BE A 6' \pm WIDE STRIP BACK OF THE SPRING POINT (SOLID LINES) OR THE ENTIRE RETURN AREA (SOLID AND DASHED LINES) AS DIRECTED BY THE ENGINEER.



** REMOVING HMA SURFACE AREA MAY BE DEFINED BY TRIANGULAR CUTS SHOWN OR MAY OTHERWISE VARY AS DIRECTED BY THE ENGINEER TO SATISFY CROWN TRANSITION OR DRAINAGE CONDITIONS.

(THESE DETAILS SHALL BE USED AT MAJOR CROSS STREETS AND ELWHERE AS DIRECTED BY THE ENGINEER.)

B					
A					
DESCRIPTION					
REVISED N'S					
DESIGN BY	K.S.M.	APPROVED			
INCHES BY		APPROVED			
CHIEF BY	J.J.	APPROVED			
CITY ENGINEER					

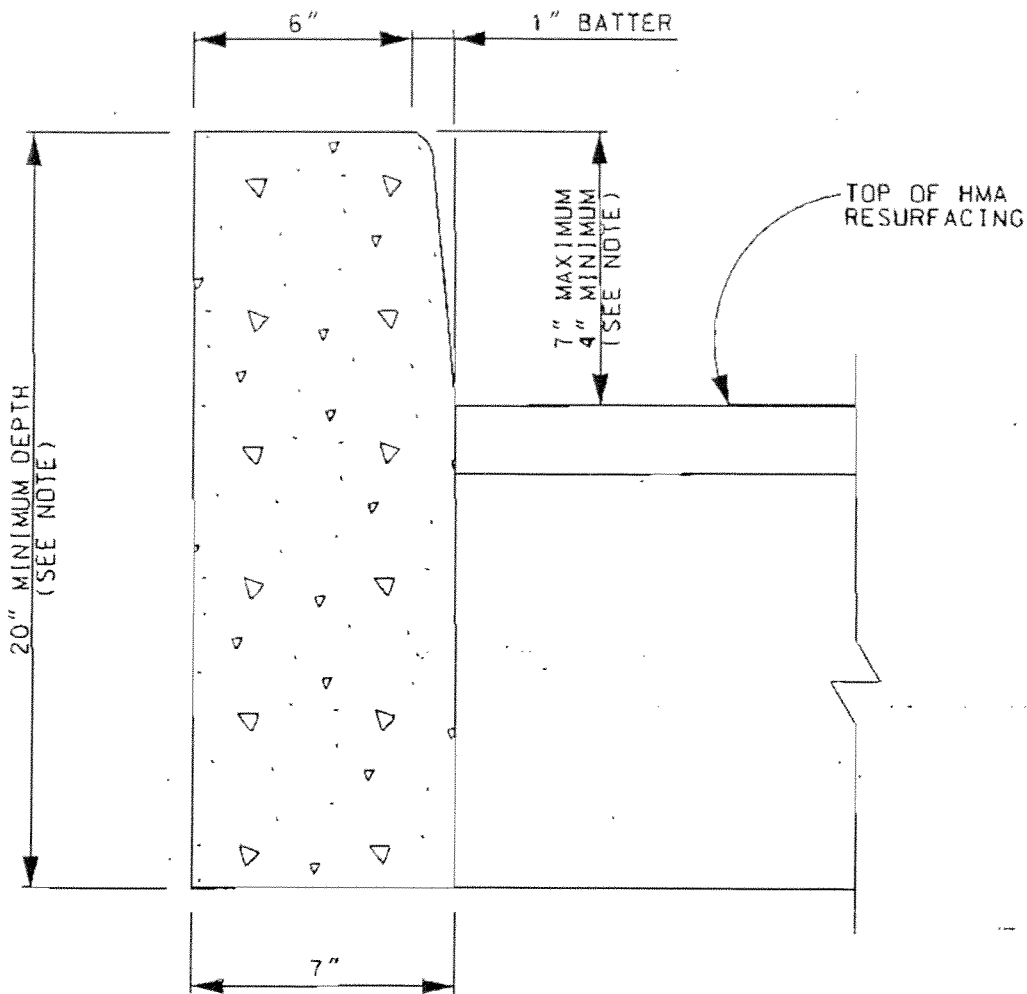
HMA APPROACH,
MODIFIED

CITY OF DETROIT
City Engineering
Division

Job No.

Drwg. No.

Date DEC. 06



NOTE:

DEPTH OF CURB SHALL BE 20" UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

B					
A					
DESCRIPTION		Drawn	Chief	Asst	Check
REVISIONS					
DRAWN BY	K.S.M.	APPROVED			
TRACED BY		APPROVED			
CHECKED BY	N.H.	APPROVED			
		CITY ENGINEER			

CURB, CONC., DETAIL CD,

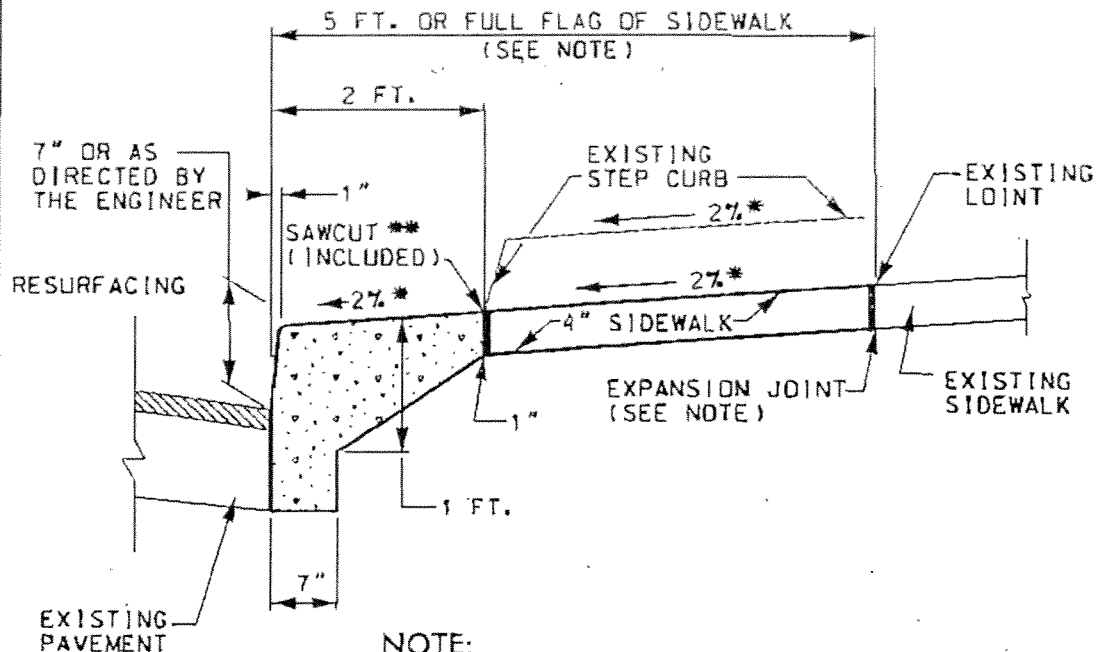
MODIFIED

CITY OF DETROIT
City Engineering
Division

Job No.

Drwg. No.

Date JAN. 06



NOTE:

WHERE THE WIDTH OF THE NEW INTEGRAL CURB AND SIDEWALK IS MORE THAN 2 FT., PROVIDE A 1" EXPANSION JOINT ALONG THE 2 FT. WIDTH OR AS DIRECTED BY THE ENGINEER.

- * SIDEWALK SLOPE SHALL BE 2% UNLESS OTHERWISE APPROVED BY THE ENGINEER.
- ** SAWCUT IS INCLUDED IN THE PAY ITEM INTEGRAL CURB AND SIDEWALK, 2 FEET MODIFIED.

B									
A									
DESCRIPTION					Drawn	Check	App'd	Date	
REVISIONS									
DESIGNED BY	K.S.M.				APPROVED				
EDITED BY	J.P.				APPROVED				
CHECKED BY					APPROVED				
					CITY ENGINEER				

INTEGRAL CURB AND SIDEWALK

REPLACES SAME TITLE 1/06

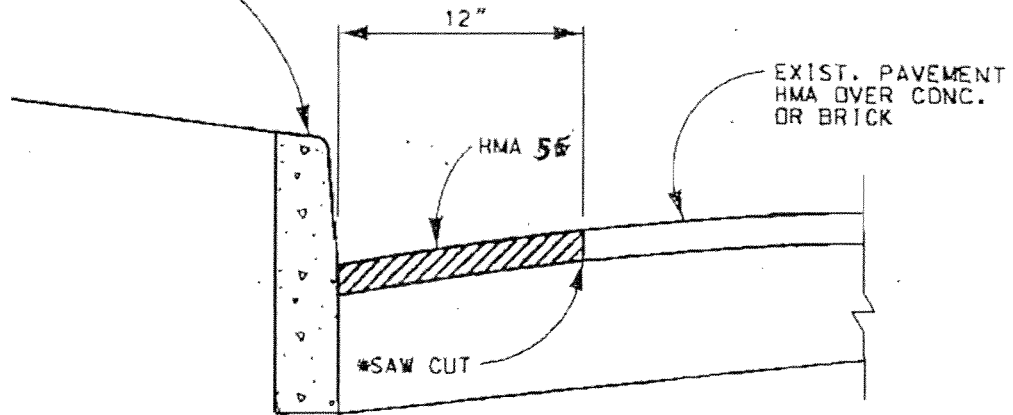
CITY OF DETROIT
City Engineering
Division

Job No.

Drawg. No.

Date JULY 09

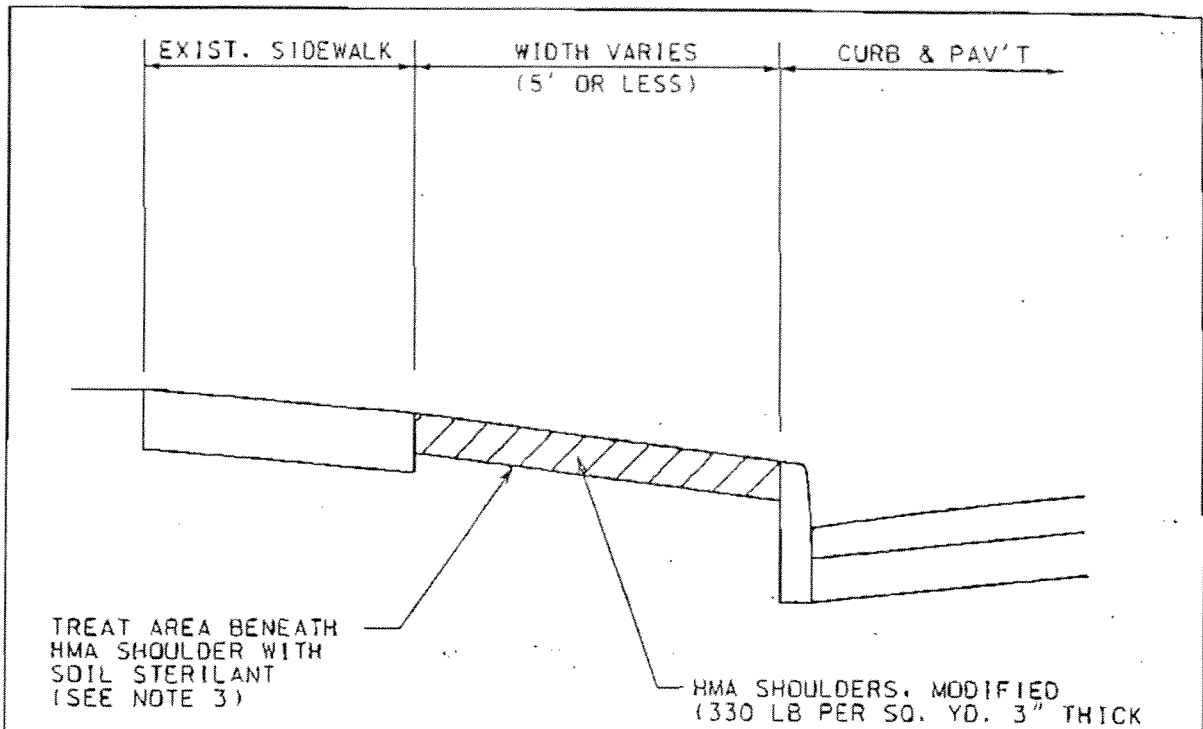
PROPOSED CURB, CONC.
DETAIL CD.
MODIFIED



NOTES:

- * THE ITEM OF SAW CUT WILL BE INCLUDED IN THE PAY ITEM OF
 - 1. HMA SURFACE, REM, MODIFIED
 - 2. HAND PATCHING
- THIS DETAIL SHALL BE USED AT LOCATIONS WHERE PROPOSED CURB IS CONSTRUCTED ADJACENT TO EXISTING HMA PAVEMENT NOT TO BE RESURFACED.

B					HMA PATCHING AT		CITY OF DETROIT		
A									
DESCRIPTION		Draw	Chk	Appd	Date	PROPOSED CURB, CONC, DETAIL CD, MODIFIED		City Engineering Division	
REVISIO N 1									
DESIGN BY	K.S.M.	APPROVED				Job No.			
EDITED BY	J.P.	APPROVED				Drwg. No.			
CHECKED BY		APPROVED				Date		JULY 09	



NOTE:

1. THE MIXTURE FOR HMA SHOULDERS SHALL BE OF THE SAME MIXTURE AS SPECIFIED FOR THE LEVELING OR THE TOP COARSE.
2. THE MATERIAL FOR HMA SHOULDERS SHALL BE IN ACCORDANCE WITH SECTION 501 OF THE 2003 MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION. 2012
3. THE MATERIAL FOR SOIL STERILANT SHALL BE IN ACCORDANCE WITH SUB SECTION 201.02 OF THE 2003 MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION. 2012

B					
A					
DESCRIPTION		Drawn	Checked	App'd	Date
REVISIONS					
DESIGNED BY	K.S.M.	APPROVED			
DRAWN BY	J.P.	APPROVED			
CHECKED BY		APPROVED		CITY ENGINEER	

HMA SHOULDER

DETAIL

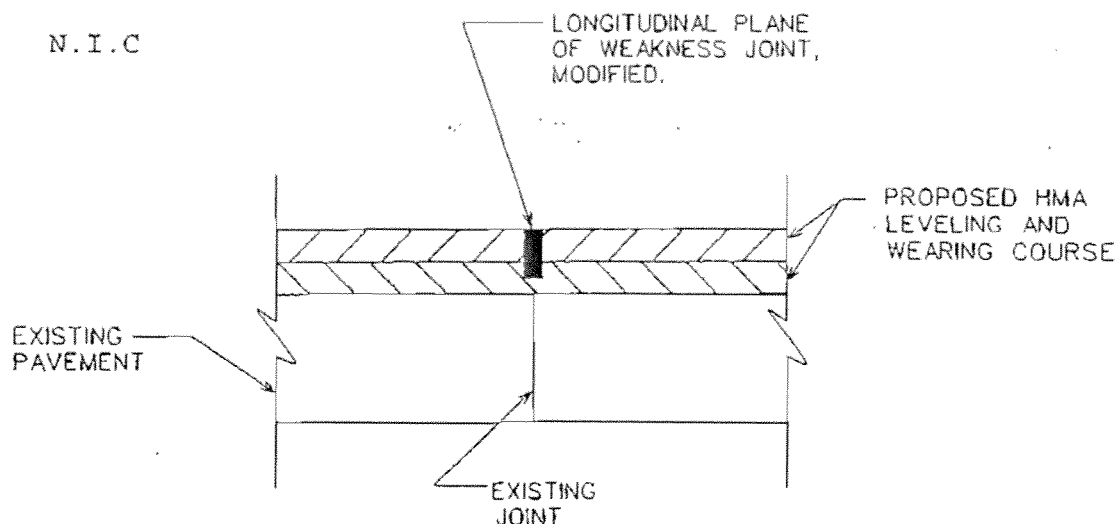
CITY OF DETROIT
City Engineering
Division

Job No.

Drwg. No.

Date JULY 09

N.I.C



NOTES:

SAW PROPOSED HMA SURFACE MIN. 2" IN DEPTH AND MIN. $\frac{1}{8}$ " IN WIDTH AS DIRECTED BY THE ENGINEER. THE JOINT SHALL BE SEALED WITH COLD OR HOT APPLIED JOINT SEALANT. THE JOINT SEALANT, EQUIPMENT AND METHOD OF APPLICATION SHALL BE IN ACCORDANCE WITH THE ~~2003~~ ²⁰¹² MDOT STANDARD SPECIFICATION FOR CONSTRUCTION, SUBSECTIONS 914.04, 602.03-A13 AND 602.03-54 RESPECTIVELY.

THE WORK OF SAWING AND SEALING LONGITUDINAL PLANE OF WEAKNESS JT, WILL BE DETERMINED BY LENGTH IN LINEAR FEET AND PAID FOR AT THE CONTRACT UNIT PRICE FOR "LONGITUDINAL PLANE OF WEAKNESS JT, MODIFIED"

B						LONGITUDINAL PLANE OF WEAKNESS JT, MODIFIED	CITY OF DETROIT City Engineering Division	
A								Job No.
DESCRIPTION								Drwg. No.
REVISIONS								Date JAN. 06
DESIGN BY	K.S.M.	APPROVED						
TRACED BY		APPROVED						
CHECKED BY	N.H.	APPROVED						

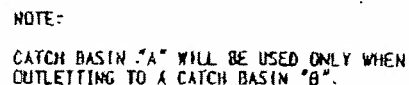
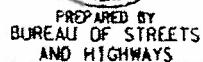


Diagram illustrating the cross-section of a manhole structure, showing the following components and dimensions:

- STANDARD FLAT GRATE & FRAME**: Located at the top of the structure.
- 3 COURSES VERTICAL BRICK STOCK (MAY BE DECREASED TO 1 COURSE IN SPECIAL CASES TO REDUCE DEPTH.)**: The uppermost masonry layer below the grate.
- PLASTER COAT ENTIRE STRUCTURE (BLOCK) WITH 1/2" CEMENT MORTAR**: A coat applied to the exterior of the concrete block.
- 6" CONCRETE BLOCK OR PRECAST CONCRETE (C-76 CLASS III)**: The main body of the manhole.
- DIAMETER AS SPECIFIED.**: The diameter of the manhole opening.
- INVERT ELEVATION AS CALLED FOR ON THE PANS**: The elevation of the bottom of the manhole.
- FILL (GRADE "A") CUSHION FOR PRECAST BASE**: A layer of fill material supporting the base.
- GRADE "A" CONC. BASE PRECAST OR POURED IN PLACE - MIN. REINF. #6GA. 4" X 4" MESH OR EQUIVALENT AREA. (PRECAST BASE ONLY)**: The base of the manhole.
- 2'-0" DIA.**: The diameter of the base.
- 4'-0" DIA.**: The overall diameter of the structure.
- 6"**: The thickness of the base.
- 3"**: The thickness of the fill cushion.
- 3" MIN.**: The minimum thickness of the concrete block.
- 1/2"**: The thickness of the plaster coat.
- MORTAR BED**: The layer of mortar supporting the grate.
- MAX. DEPTH 8'-0"**: The maximum depth of the structure.
- MIN. DEPTH 4'-0"**: The minimum depth of the structure.
- UNLESS OTHERWISE SPECIFIED ON PANS.**: A note indicating that dimensions may vary based on the plans.

CATCH BASIN "A"

REVISED DATE(METRIC TO ENGLISH UNIT SYSTEM):DEC.2002



CHECKED BY:

Dudley Horder
ENGINEER OF STREETS
Alvin Tolley
ENGINEER
City Engineer

CATCH BASINS "A" AND "B"
AND FLAT GRATE AND FRAME

SHEET
1 OF 2

PLAN VIEW

SECTION C-C

SECTION 8-B

CATCH BASIN "B"

NOTE "A":

WALL THICKNESS SHALL BE 8" FROM THE TOP OF STRUCTURE TO A DEPTH OF 15'. BELOW 15' THE THICKNESS OF THE WALL SHALL BE 12"

REVISED DATE (METRIC TO
ENGLISH UNIT SYSTEM): DEC. 2002

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

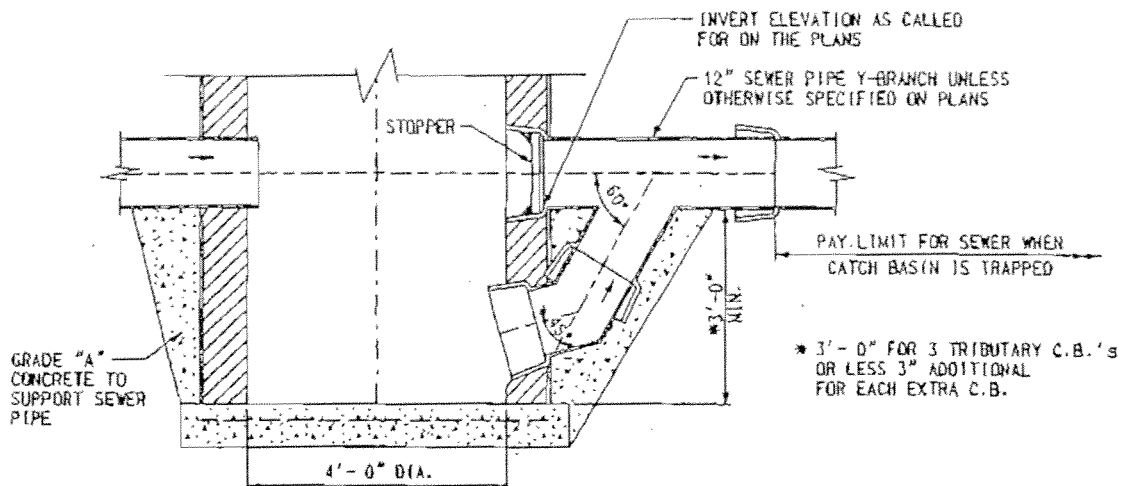
CATCH BASINS "A" AND "B"
AND FLAT GRATE AND FRAME

03/07/98
PLAN DATE

DRAWING NO.
35

DETAIL STANDARD NO.
C-5028

SHEET
7 OF 7

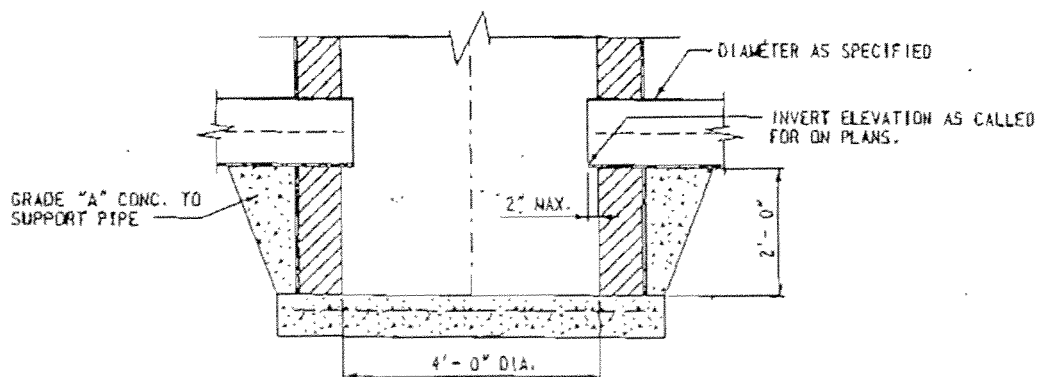


NOTES:

SEWER TRAP TO BE OF THE SAME MAT'L. & STRENGTH AS THE OUTLET SEWER PIPE.

TRAP SHALL BE SUPPORTED BY BLOCKING OR ANY OTHER MEANS UNTIL CATCH BASIN IS COMPLETED AND CONCRETE OR MORTAR AROUND BRICK IS SET. ANY VOIDS BETWEEN THE TRAP AND GROUND UNDERNEATH SHALL BE FILLED WITH GRADE "A" CONCRETE.

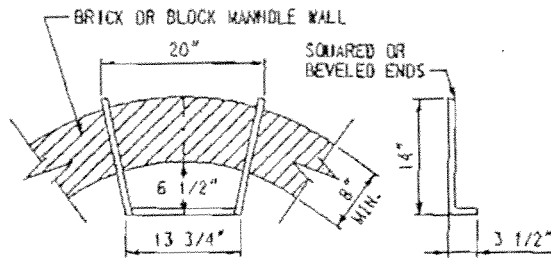
DETAIL OF TRAP FOR CATCH BASIN "B"



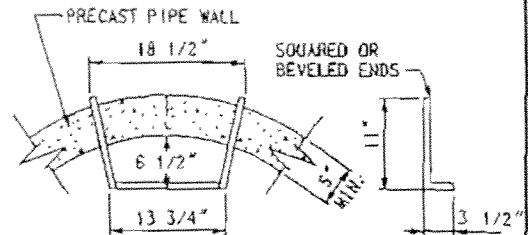
DETAIL OF SUMP FOR CATCH BASIN "B"

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

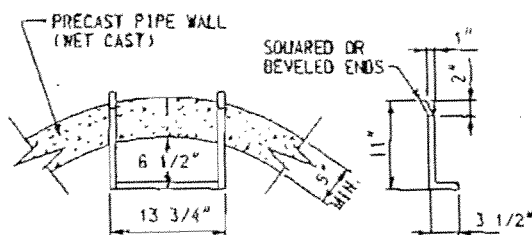
CITY OF DETROIT			
CITY ENGINEERING DIVISION, D.P.W.			
STANDARD PLAN FOR			
CATCH BASINS "A" AND "B"			
AND FLAT GRATE AND FRAME			
03/07/98 PLAN DATE	DRAWING NO. 35	DETAIL STANDARD NO. C-5028	SHEET 3 OF 7



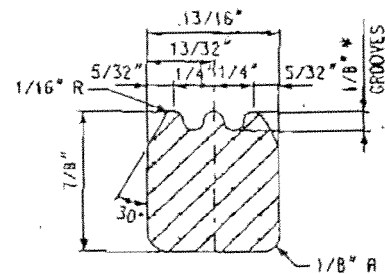
PLAN VIEW
(USE WITH BRICK OR BLOCK M.H.)



PLAN VIEW
(USE WITH PRECAST M.H. UNITS)



PLAN VIEW
(USE WITH WET CAST M.H. UNITS)



CROSS - SECTION

*NOTE:

IN LIEU OF GROOVES, ALTERNATE
FOOT HOLD CONFIGURATIONS WILL
BE CONSIDERED FOR APPROVAL.

ALUMINUM MANHOLE STEP STANDARD DETAILS

NO SCALE.

NOTES:

1. MANHOLE STEPS SHALL CONFORM TO THE REQUIREMENTS FOR "ALUMINUM ALLOY EXTRUDED BARS, RODS, SHAPES AND TUBES", A.S.T.M. B221 (CURRENT), ALLOY 6061, TEMPER T-6 OR APPROVED EQUAL.
2. EITHER THE FLARED LEG OR PARALLEL LEG STEP MAY BE USED FOR POURED IN PLACE CONCRETE CONSTRUCTION OR IN WET CAST MANHOLE UNITS.
3. THE PARALLEL LEG STEP SHALL BE USED IN EXISTING STRUCTURES BY PLACING IN DRILLED HOLES AND GROUTING WITH NON-SHRINK GROUT.

REVISED DATE (METRIC TO
ENGLISH UNIT SYSTEM): DEC. 2002

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

CATCH BASINS "A" AND "B"
AND FLAT GRATE AND FRAME

03/02/98
PLAN DATE

DRAWING NO.
35

DETAIL STANDARD NO.
C-5028

SHEET
1 OF 7

GENERAL NOTES

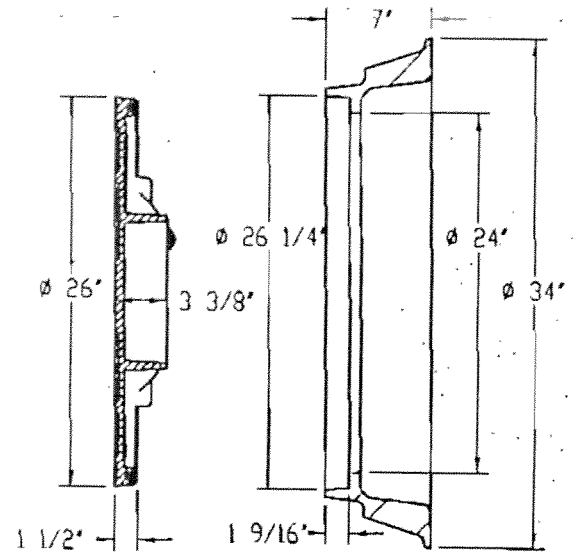
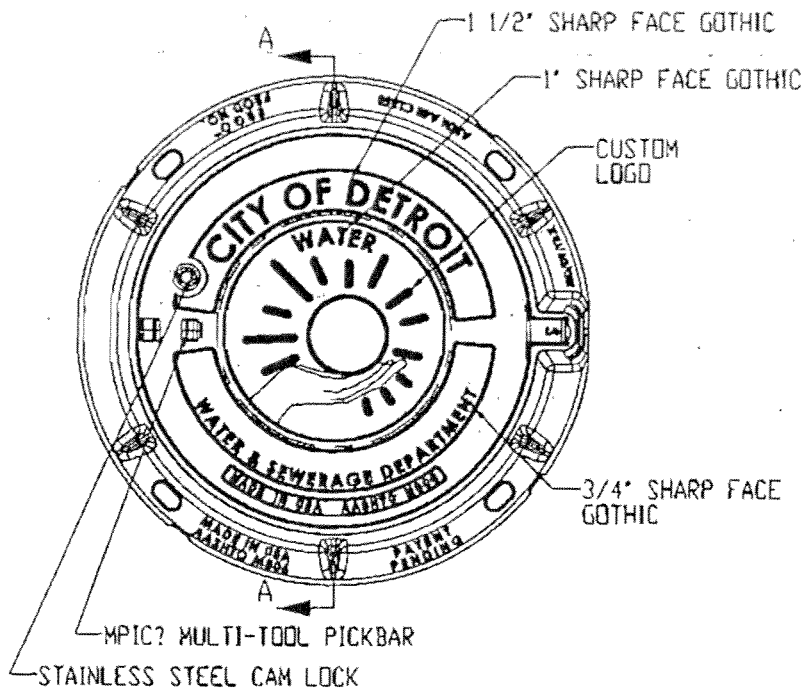
1. CENTER OF CATCH BASIN SHALL BE 20 INCHES FROM BACK OF CURB.
2. ALL SIZES AND FLOW LINES OF PIPES, AND ELEVATIONS FOR TOP AND BOTTOM OF STRUCTURES SHALL BE DETERMINED FROM THE PLANS OR CONSTRUCTION REQUIREMENTS.
THE BELL SHALL BE REMOVED FROM THE FIRST LENGTH OF OUTLET PIPE PROJECTING THROUGH THE WALL OF THE STRUCTURES WHEN ANY STRUCTURE IS CONSTRUCTED OF PRECAST CONCRETE OR CONCRETE BLOCK. THE TOP OF THE MASONRY SHALL BE LEFT SUFFICIENTLY LOW TO PERMIT PROPER ADJUSTMENT OF THE COVER TO GRADE BY THE USE OF MORTAR OR BRICKS AS DIRECTED BY THE ENGINEER.
3. A TRAP, AS DETAILED ON SHEET 3 OF 7, SHALL BE PLACED WHERE CALLED FOR IN THE OUTLET SEWER LINE OF CATCH BASINS "B". THIS TRAP SHALL BE SET INTO THE MASONRY WALL AS SHOWN ON THE DETAIL.
THE SPACE BETWEEN THE FACES OF THE WALL AND THE TRAP SHALL BE COMPLETELY FILLED WITH CEMENT, MORTAR OR CONCRETE, SO AS TO HOLD TRAP SECURELY IN PLACE.
4. THE MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARD SPECIFICATIONS FOR PAVING AND RELATED CONSTRUCTION EXCEPT AS NOTED ON THIS SHEET AND ON THE PLANS.
5. A PLASTER COAT OF MORTAR 1/2" IN THICKNESS SHALL BE APPLIED TO THE OUTER SURFACE OF THE STRUCTURE AS SHOWN. A 1/2" CEMENT PLASTER COAT SHALL BE PLACED ON THE INSIDE OF ALL SUMPS.
6. CONTRACTOR SHALL VERIFY ELEVATIONS OF EXISTING UTILITIES TO ENABLE CONSTRUCTION TO INDICATED ELEVATIONS SHOWN ON DRAWINGS. IF NECESSARY, INVERT ELEVATIONS SHOWN ON THE DRAWINGS MAY BE ALTERED IN THE FIELD TO CLEAR EXISTING UTILITIES. SUCH ALTERATIONS, UPWARD OR DOWNWARD, SHALL BE AT NO CHANGE IN CONTRACT PRICE.
7. WHEN PRECAST CONCRETE PIPE SECTIONS ARE USED FOR CATCH BASINS, EITHER A SECTION OF THE INLET AND OUTLET PIPES OR AN OPENING OR EYE FOR THE INLET AND OUTLET PIPES SHALL BE CAST INTO THE WALL OF THE CATCH BASIN PIPE WHEN IT IS BEING MANUFACTURED. EYES IN PRECAST PIPE SECTIONS SHALL BE FURNISHED TO ACCOMMODATE A FLEXIBLE JOINT CONNECTION SUCH AS PRESS-WEDGE BY PRESS SEAL GASKET CORP. OR RES-SEAL BY SCALES MFG. CORP.
8. PAY LIMIT FOR SEWERS SHALL BE INSIDE FACES OF STRUCTURES UNLESS OTHERWISE NOTED.
9. ALL DIMENSIONS ARE IN INCHES (") UNLESS OTHERWISE NOTED.

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR
CATCH BASINS "A" AND "B"
AND FLAT GRATE AND FRAME

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

03/07/98 PLAN DATE	DRAWING NO. 35	DETAIL STANDARD NO. C-5028	SHEET 7 OF 7
-----------------------	-------------------	-------------------------------	-----------------

ERGO Assembly



SECTION A-A

DESIGN FEATURES

-MATERIALS

COVER: DUCTILE IRON (80-55-06)
FRAME: GRAY IRON (CL35)

-DESIGN LOAD: HEAVY DUTY

-OPEN AREA: N/A

-COATING: UNDIPPED

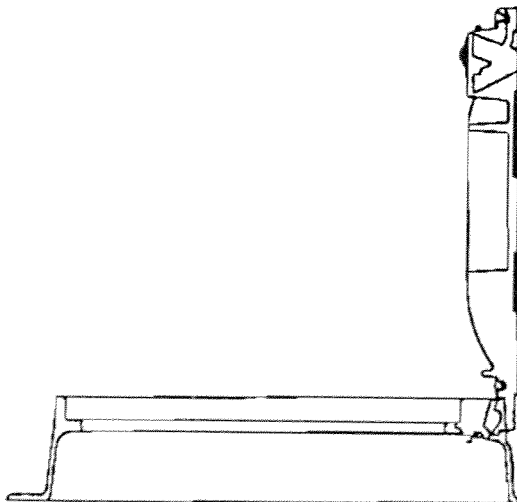
- DESIGNATES MACHINED SURFACE

CERTIFICATION

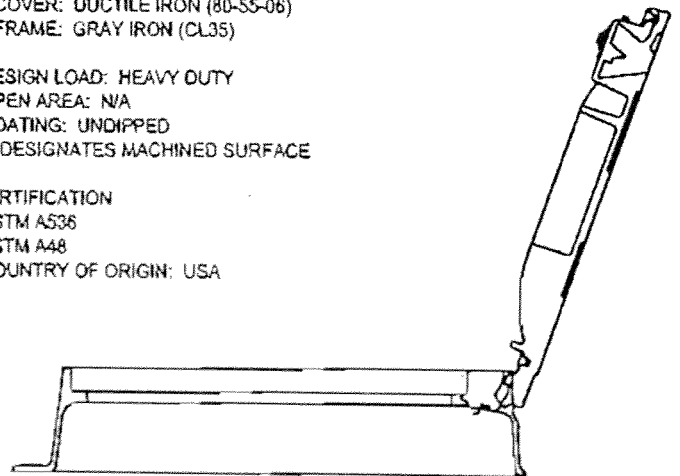
-ASTM A536

-ASTM A48

-COUNTRY OF ORIGIN: USA



SAFETY LOCK @ 90°



FULLY OPENED & REMOVAL POSITION @ 120°

DWSD APPROVAL: *[Signature]*

DATE: *04/16/14*



CITY OF DETROIT
CITY ENGINEERING DIVISION
DPW

DWSD MANHOLE
ERGO ASSEMBLY

APPROVED:

[Signature] 4/16/14
ENGINEER OF STREETS
[Signature] 4/16/14
CITY ENGINEER

SHEET 1 OF 1

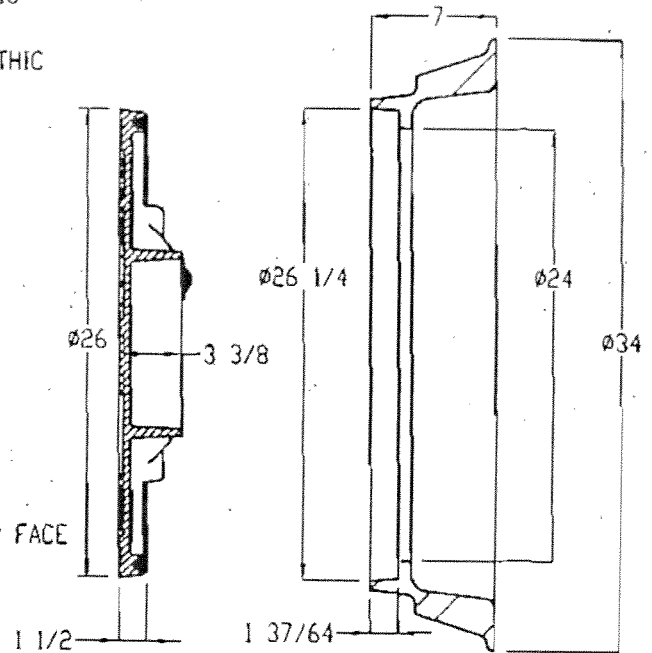
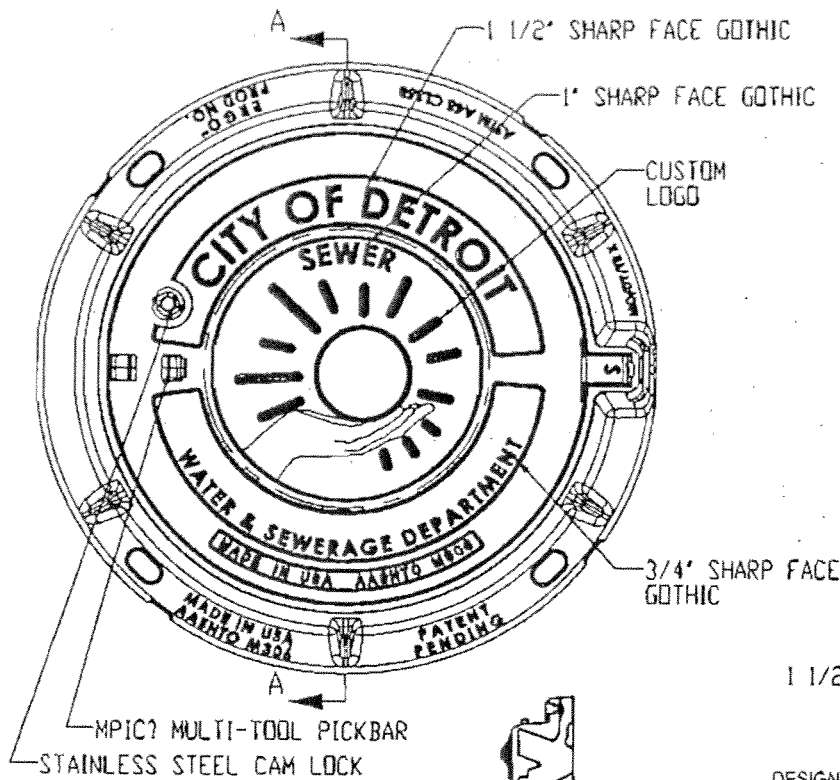
DETAIL STD. No.

DRAWING No. 101

DRAWN BY: N.Y. SANTOS

DATE: 0/15/2014

ERGO Assembly



SECTION A-A

DESIGN FEATURES

-MATERIALS

COVER: DUCTILE IRON (80-55-06)
FRAME: GRAY IRON (CL35)

-DESIGN LOAD: HEAVY DUTY
-OPEN AREA: N/A
-COATING: UNDIPTED
- DESIGNATES MACHINED SURFACE

CERTIFICATION

-ASTM A538
-ASTM A48
-COUNTRY OF ORIGIN: USA

SAFETY LOCK @ 90°

FULLY OPENED & REMOVAL POSITION @ 120°

DWSD APPROVAL:

DATE:

Weights (lbs/kg), dimensions (inches/mm)
and drawings provided for your guidance. We
reserve the right to modify specifications without
prior notice.



CITY OF DETROIT
CITY ENGINEERING DIVISION
DPW

DWSD MANHOLE
ERGO ASSEMBLY

APPROVED:

Signature 4/15/14
ENGINEER OF STREETS
Signature 4/16/14
CITY ENGINEER

SHEET 1 OF 1

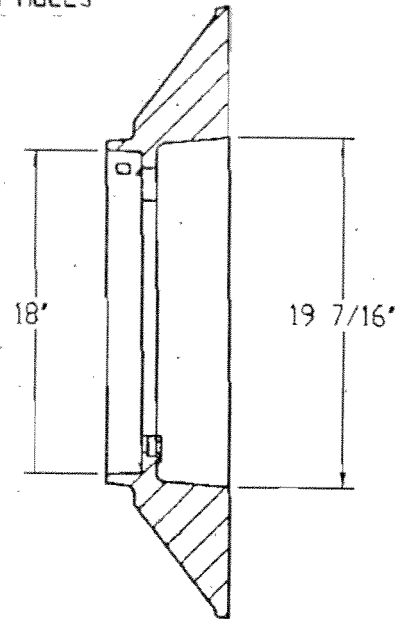
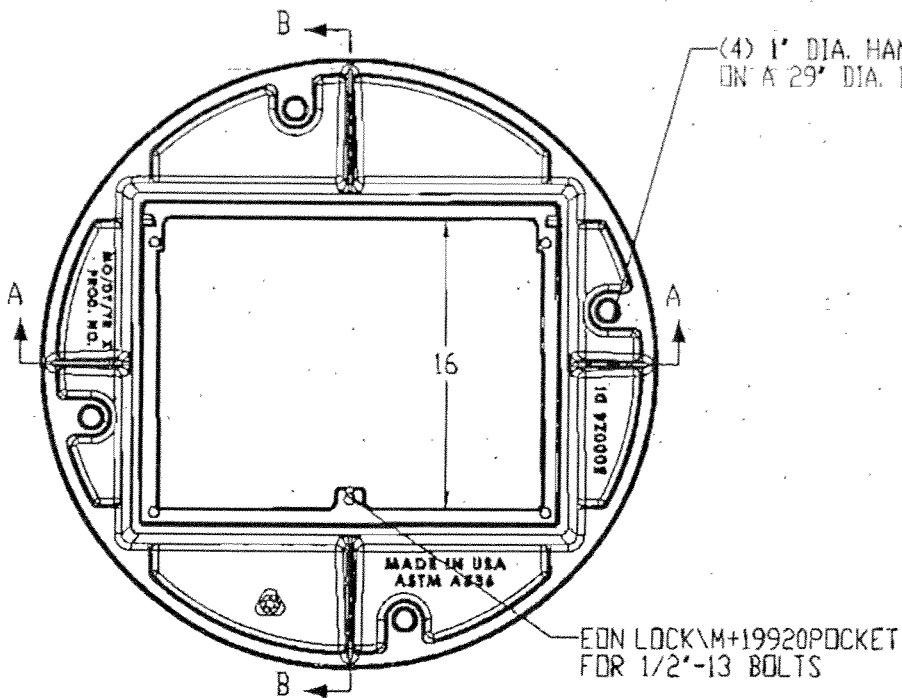
DETAIL STD. No.

DRAWING No. 102

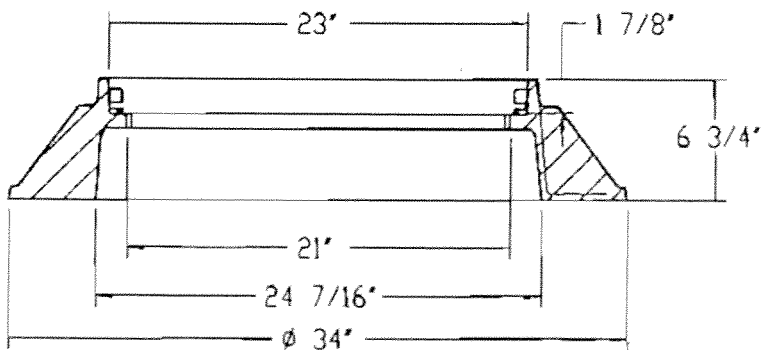
DRAWN BY: N.Y. SANTOS

DATE: 02/5/2014

5000 Frame



SECTION B-B



SECTION A-A

DESIGN FEATURES

MATERIALS

FRAME: DUCTILE IRON (70-60-05)

-DESIGN LOAD: HEAVY DUTY

-COATING: UNDIPPED

- / DESIGNATES MACHINED SURFACE

CERTIFICATION

-ASTM A538

-COUNTRY OF ORIGIN: USA

DWSD APPROVAL:

D. Singlet

DATE:

04/16/14



CITY OF DETROIT
CITY ENGINEERING DIVISION
DPW

DWSD MANHOLE
5000 FRAME

APPROVED:

approved 4/16/14
ENGINEER OF STREETS
David J. ...
CITY ENGINEER

SHEET 1 OF 1

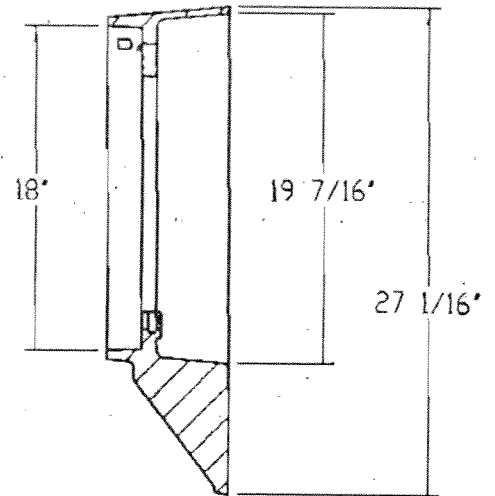
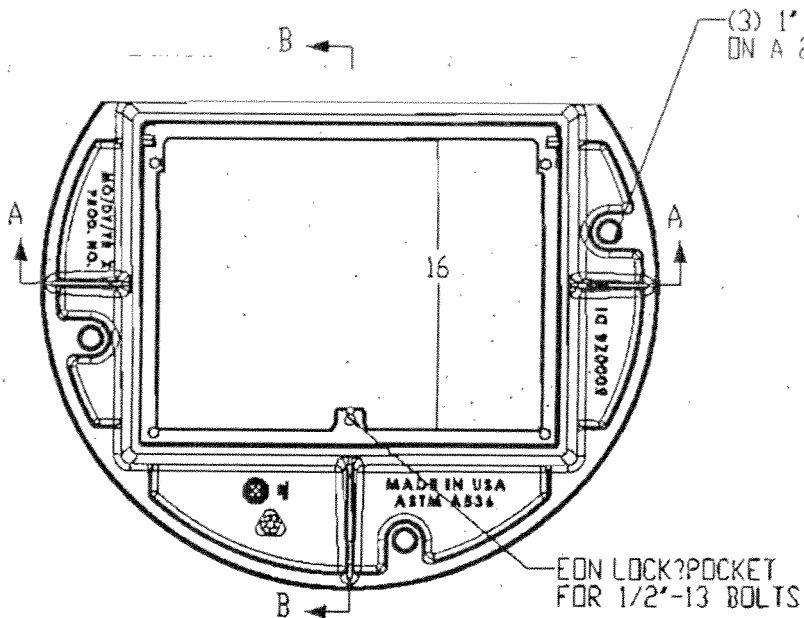
DETAIL STD. No.

DRAWING No. 163

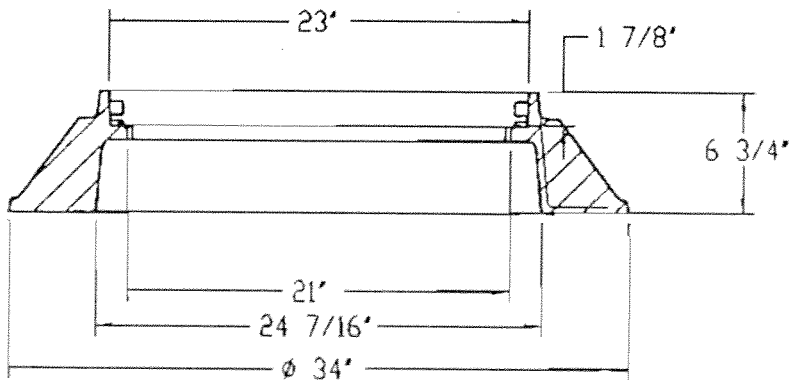
DRAWN BY: N.Y. SANTOS

DATE: 01/5/2014

5000 Frame



SECTION B-B



SECTION A-A

DESIGN FEATURES

MATERIALS

FRAME: DUCTILE IRON (70-50-05)

DESIGN LOAD: HEAVY DUTY

COATING: UNDIPPED

✓ DESIGNATES MACHINED SURFACE

CERTIFICATION

ASTM A536

COUNTRY OF ORIGIN: USA

DWSD APPROVAL:

R. Single

DATE:

04/16/14



CITY OF DETROIT
CITY ENGINEERING DIVISION
DPW

DWSD MANHOLE
5000 FRAME

APPROVED:

Repatel 4/16/14
ENGINEER OF STREETS
Ed J 4/16/14
CITY ENGINEER

SHEET 1 OF 1

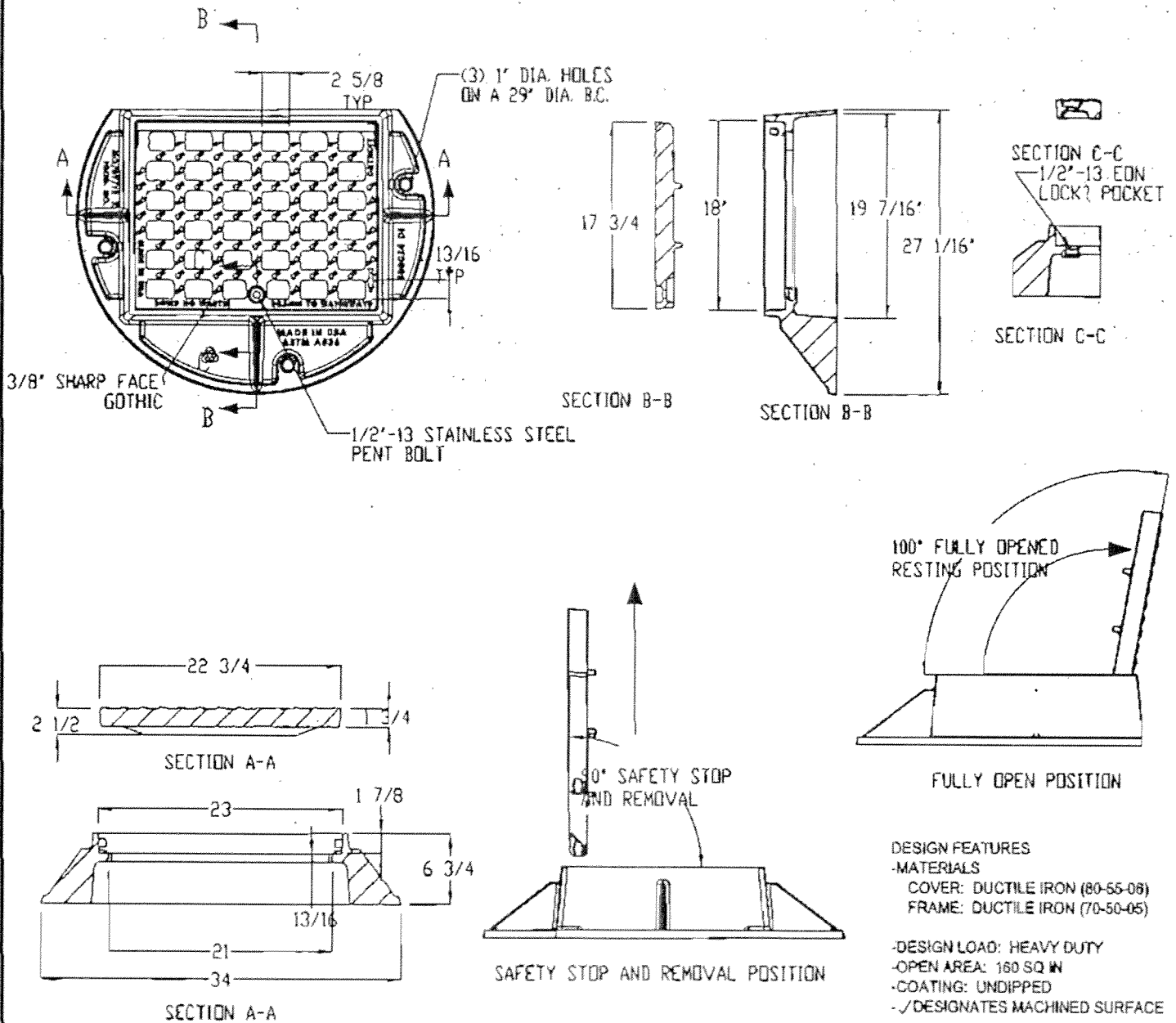
DETAIL STD. No.

DRAWING No. 104

DRAWN BY: N.Y. SANTOS

DATE: 01/15/2014

5000Z4 5000M4 Assembly



- DESIGN FEATURES
- MATERIALS
 - COVER: DUCTILE IRON (80-55-08)
 - FRAME: DUCTILE IRON (70-50-05)
 - DESIGN LOAD: HEAVY DUTY
 - OPEN AREA: 160 SQ IN
 - COATING: UNDIPTED
 - /DESIGNATES MACHINED SURFACE

- CERTIFICATION
- ASTM A536
 - COUNTRY OF ORIGIN: USA

Weights (lbs/kg), dimensions (inches/mm) and drawings provided for your guidance. We reserve the right to modify specifications without prior notice.

DWSD APPROVAL: *[Signature]*

DATE: 04/16/14



CITY OF DETROIT
CITY ENGINEERING DIVISION
DPW

CATCH BASIN
5000Z4 5000M4 ASSEMBLY

APPROVED:

[Signature] 4/16/14
ENGINEER OF STREETS
[Signature] 4/16/14
CITY ENGINEER

SHEET 1 OF 1

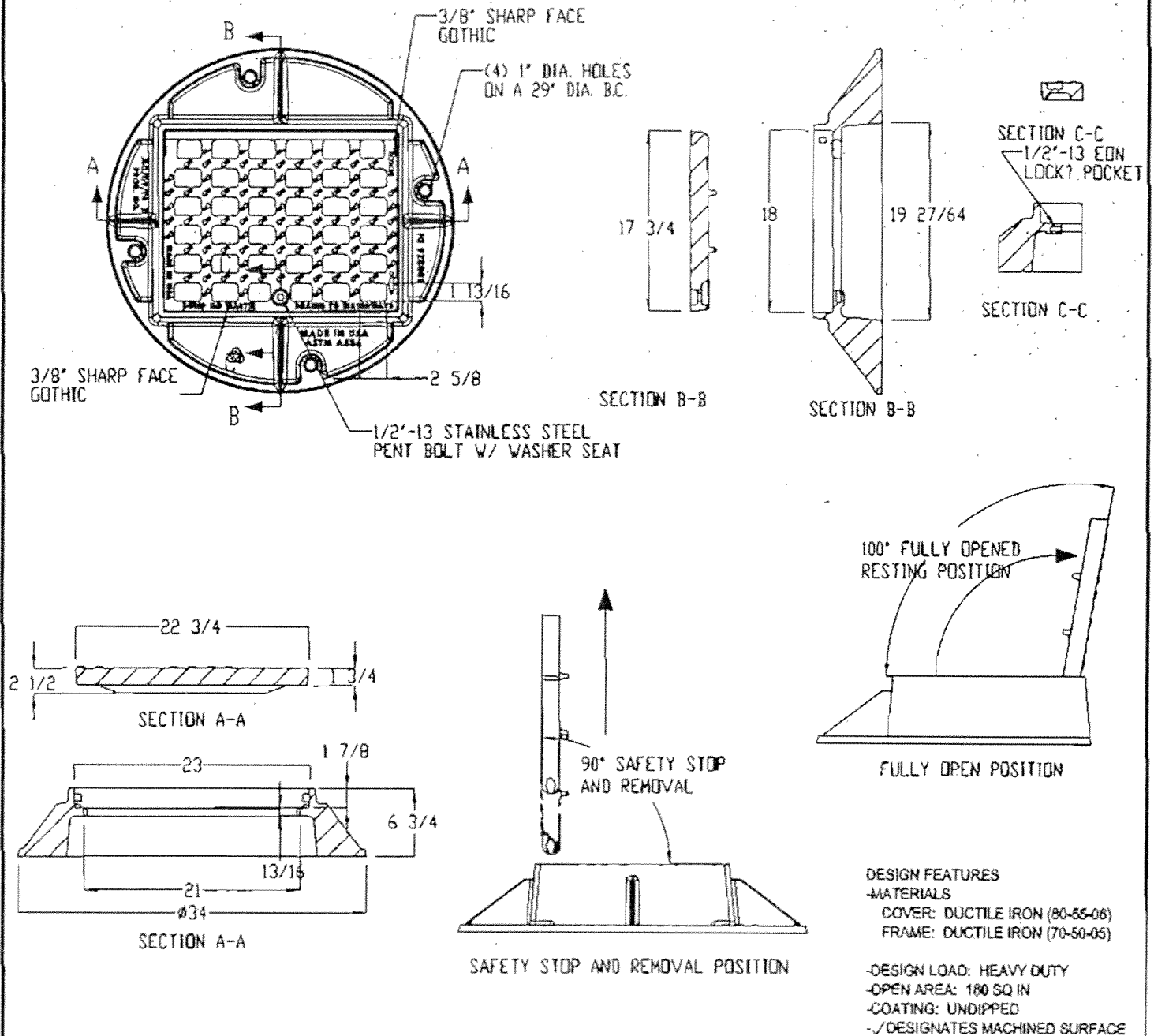
DETAIL STD. No.

DRAWING No. 100

DRAWN BY: N.Y. SANTOS

DATE: 01/15/2014

5000 Assembly



DWSD APPROVAL:

DATE:



CITY OF DETROIT
CITY ENGINEERING DIVISION
DPW

CATCH BASIN
5000 ASSEMBLY

APPROVED:

4/16/14
ENGINEER OF STREETS
CITY ENGINEER

SHEET 1 OF 1

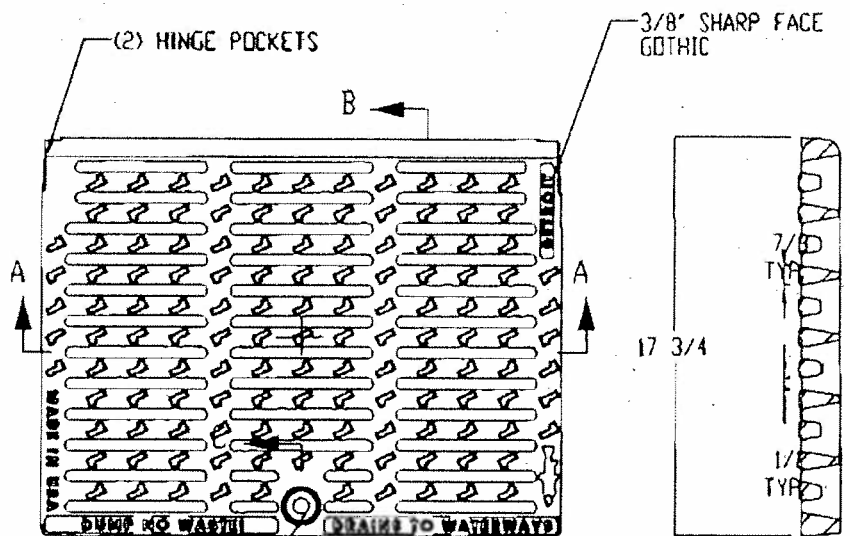
DETAIL STD. No.

DRAWING No. 107

DRAWN BY: N.Y. SANTOS

DATE: 01/18/2014

5000M5 Grate



SECTION A-A

SECTION C-C

- DESIGN FEATURES
- MATERIALS
 - COVER: DUCTILE IRON (80-55-08)
 - DESIGN LOAD: HEAVY DUTY
 - COATING: UNCOATED
 - DESIGNATES MACHINED SURFACE

CERTIFICATION

- ASTM A536
- COUNTRY OF ORIGIN: USA

DWSD APPROVAL:

DATE:



CITY OF DETROIT
CITY ENGINEERING DIVISION
DPW

A.D.A. CATCH BASIN
5000M5 GRATE

APPROVED:

reginald 4/16/14
ENGINEER OF STREETS
[Signature] 4/16/14
CITY ENGINEER

SHEET 1 OF 1

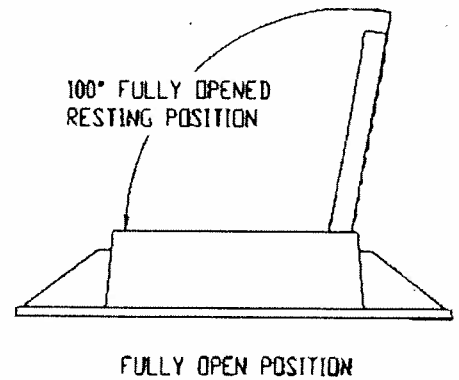
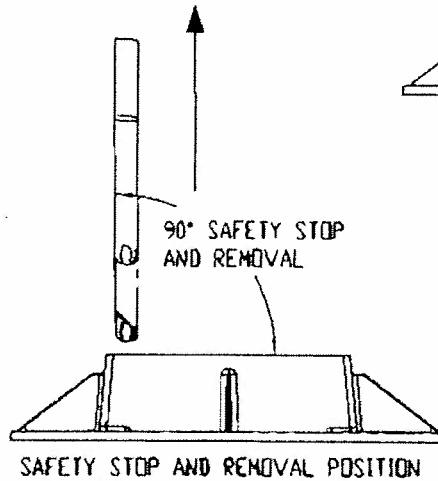
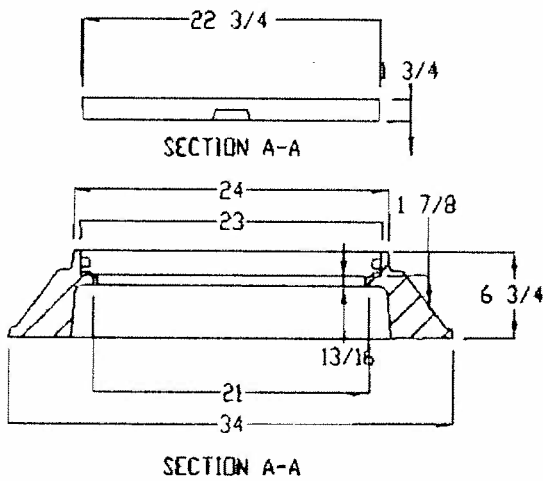
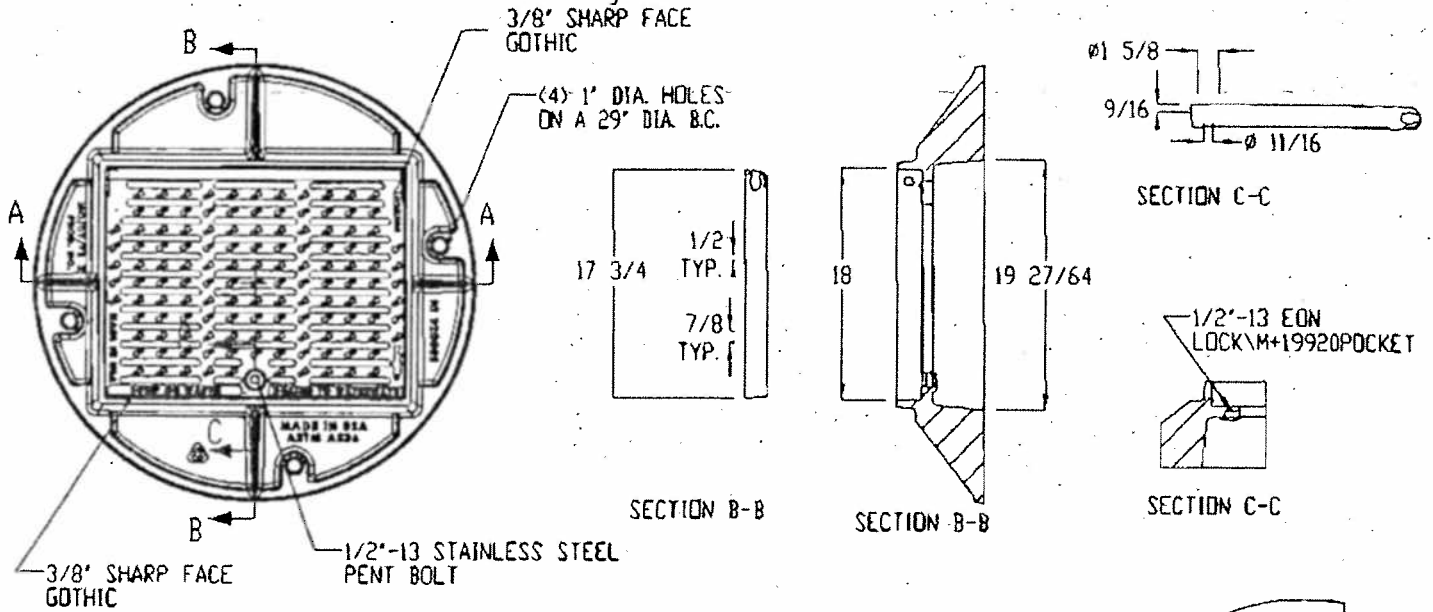
DETAIL STD. No.

DRAWING No. 100

DRAWN BY: N.Y. SANTOS

DATE: 07/5/2014

5000Z4 5000M5 Assembly



DESIGN FEATURES
 -MATERIALS
 COVER: DUCTILE IRON (80-55-06)
 FRAME: DUCTILE IRON (70-50-05)

-DESIGN LOAD: HEAVY DUTY
 -OPEN AREA: 110 SQ IN
 -COATING: UNOIPPED
 -/ DESIGNATES MACHINED SURFACE

CERTIFICATION
 -ASTM A536
 -COUNTRY OF ORIGIN: USA

DWSD APPROVAL:

R. Singley

DATE:

04/16/14

Weights (lbs/kg), dimensions (inches/mm) and drawings provided for your guidance. We reserve the right to modify specifications without prior notice.



CITY OF DETROIT
 CITY ENGINEERING DIVISION
 DPW

A.D.A. CATCH BASIN
 5000Z4 5000M5 ASSEMBLY

APPROVED:

updated 4/16/14
 ENGINEER OF STREETS
[Signature] 4/16/14
 CITY ENGINEER

SHEET 1 OF 1

DETAIL STD. No.

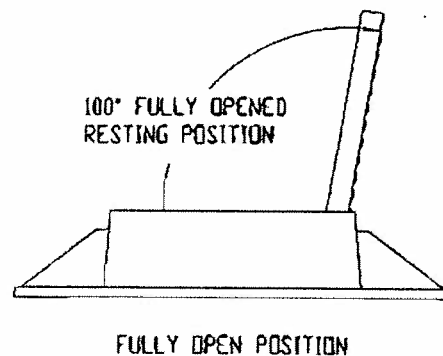
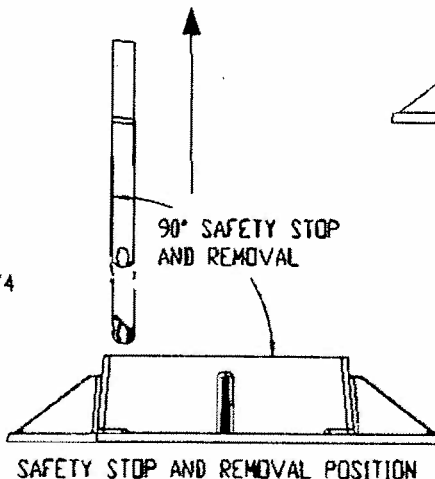
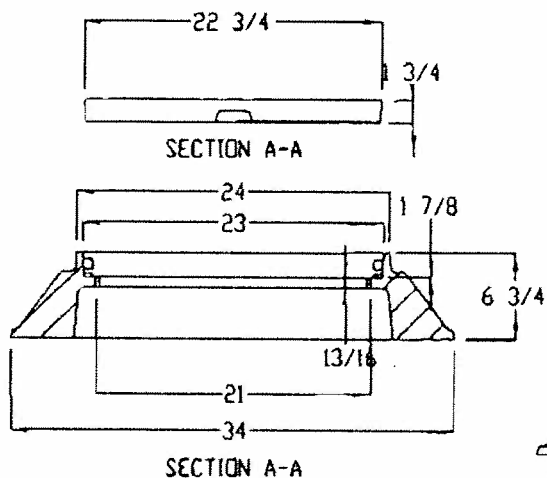
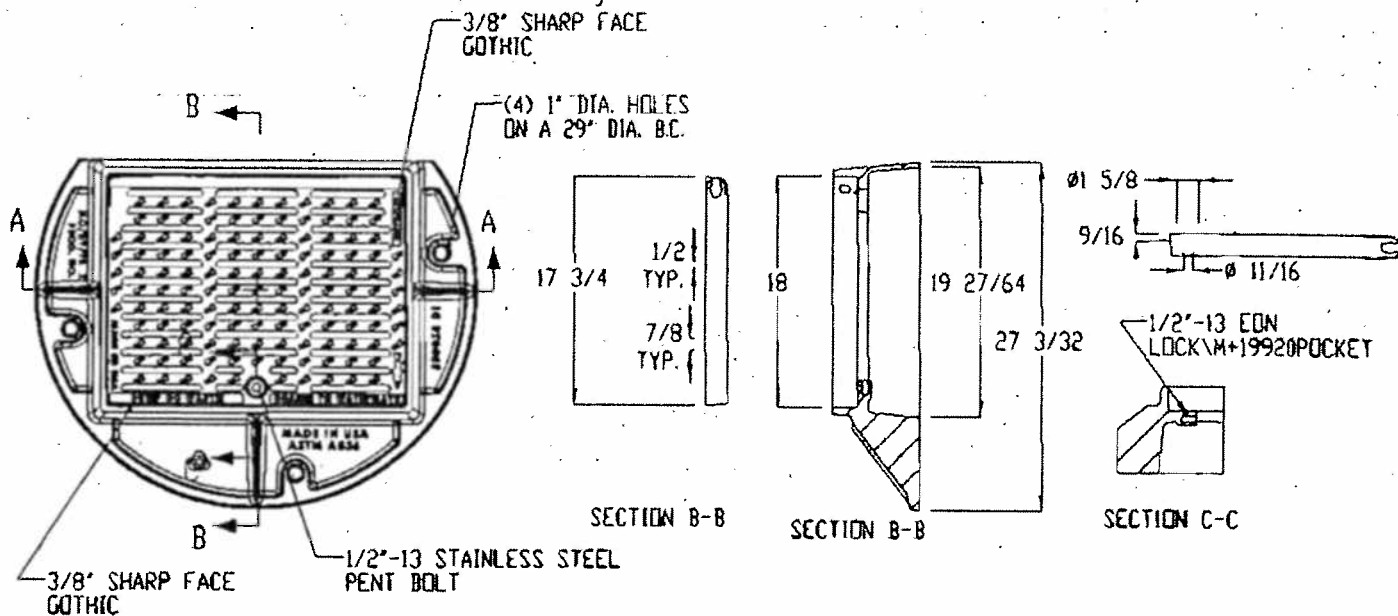
DRAWING NO. 108

DRAWN BY: N.Y. SANTOS

DATE: 01/15/2014

5000Z4 5000M5

Assembly



DESIGN FEATURES

MATERIALS

COVER: DUCTILE IRON (80-55-06)
FRAME: DUCTILE IRON (70-50-05)

-DESIGN LOAD: HEAVY DUTY
-OPEN AREA: 110 SQ IN
-COATING: UNDRIPPED
-✓ DESIGNATES MACHINED SURFACE

CERTIFICATION

-ASTM A536
-COUNTRY OF ORIGIN: USA

DWSD APPROVAL:

R. Single

DATE:

04/16/14



CITY OF DETROIT
CITY ENGINEERING DIVISION
DPW

A.D.A. CATCH BASIN
5000Z4 5000M5 ASSEMBLY

APPROVED:

updated 4/16/14
ENGINEER OF STREETS
[Signature]
CITY ENGINEER

SHEET 1 OF 1

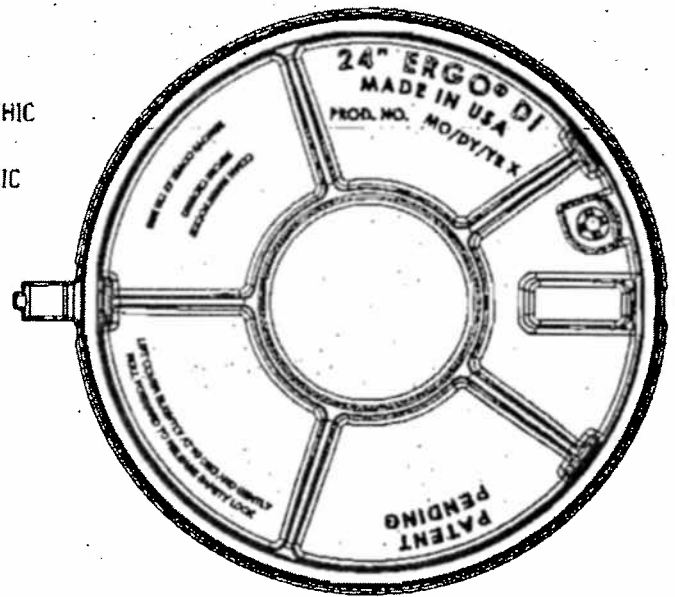
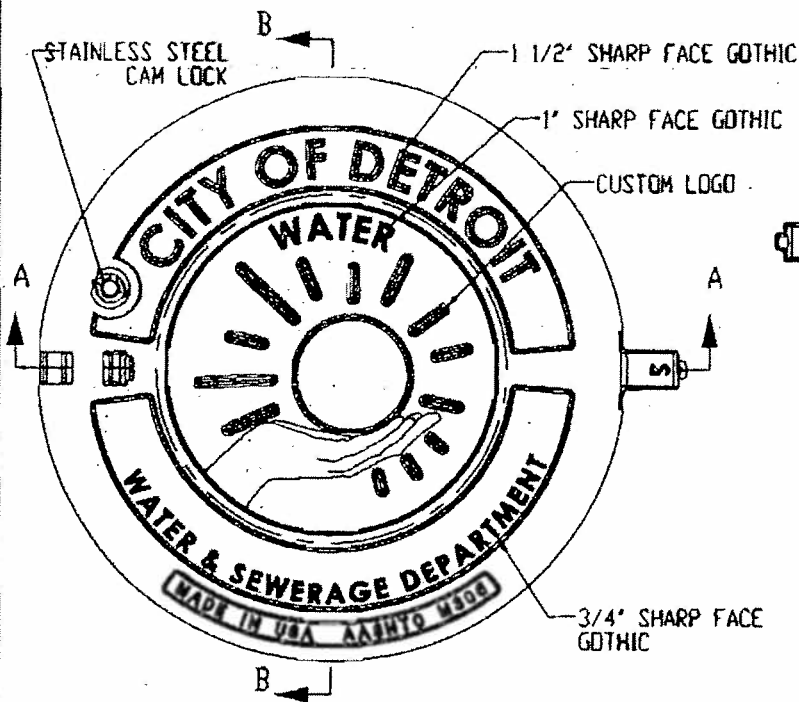
DETAIL STD. No.

DRAWING No. 118

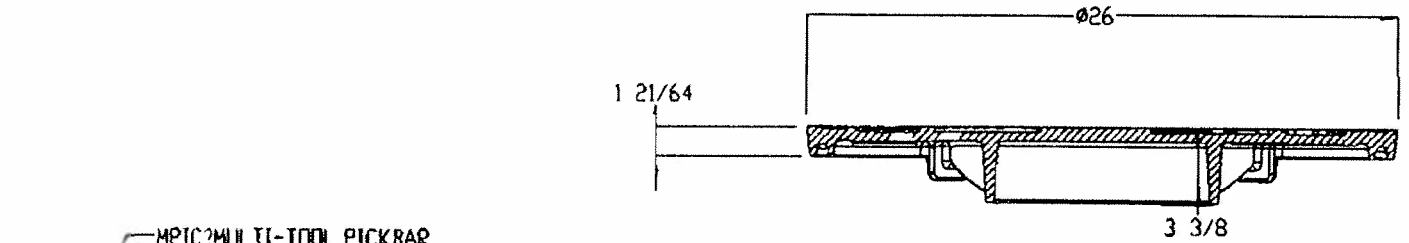
DRAWN BY: N.Y. SANTOS

DATE: 01/5/2014

ERGO Cover



BOTTOM VIEW



SECTION A-A

SECTION B-B

DESIGN FEATURES

-MATERIALS

COVER: DUCTILE IRON (80-55-08)

-DESIGN LOAD: HEAVY DUTY

-OPEN AREA: N/A

-COATING: UNDIPPED

- / DESIGNATES MACHINED SURFACE

CERTIFICATION

-ASTM A536

-COUNTRY OF ORIGIN: USA

DWSD APPROVAL:

R. Singley

DATE:

04/16/14



CITY OF DETROIT
CITY ENGINEERING DIVISION
DPW

DWSD MANHOLE
ERGO COVER

APPROVED:

4/16/14
CITY ENGINEER

SHEET 1 OF 1

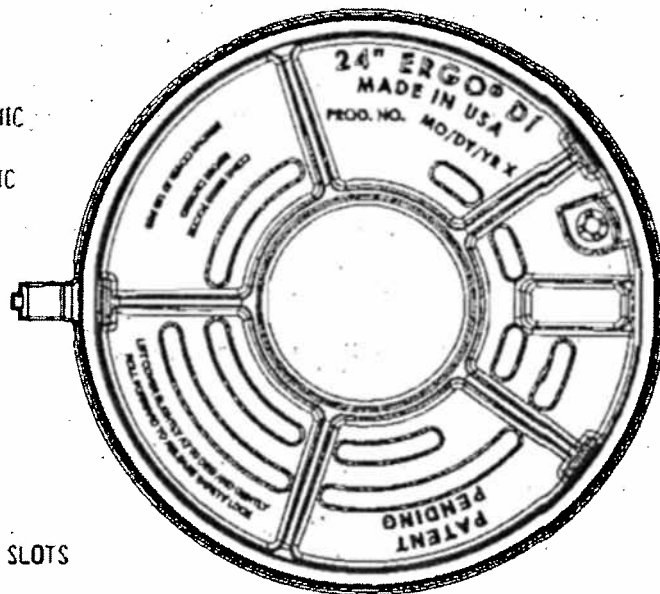
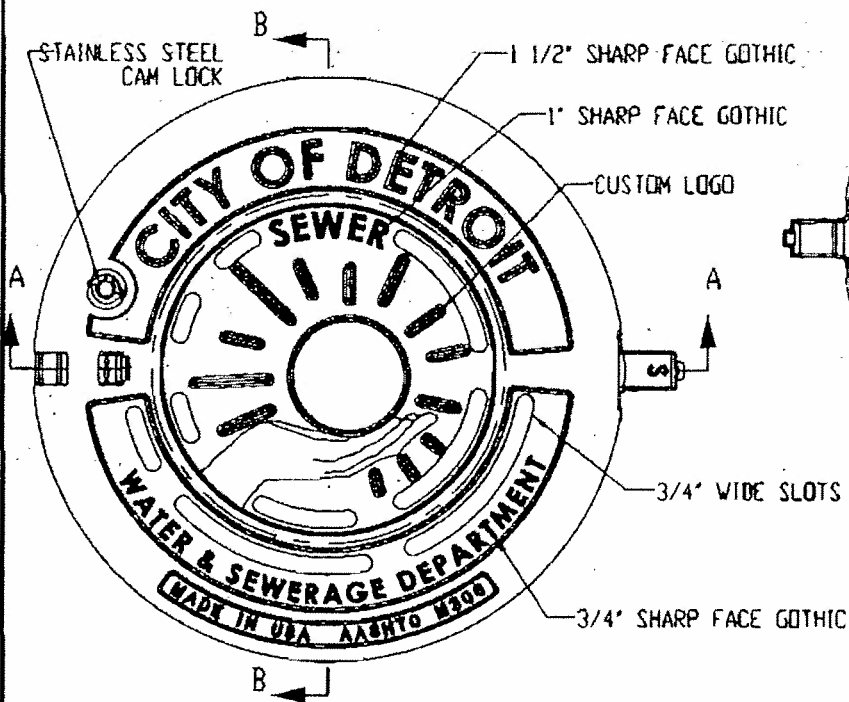
DETAIL STD. No.

DRAWING No. 111

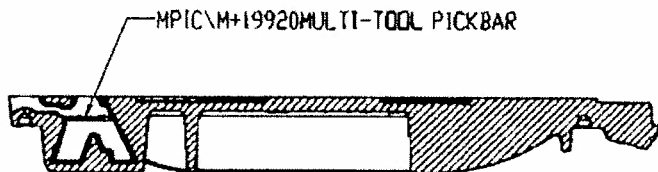
DRAWN BY: N.Y. SANTOS

DATE: 01/02/14

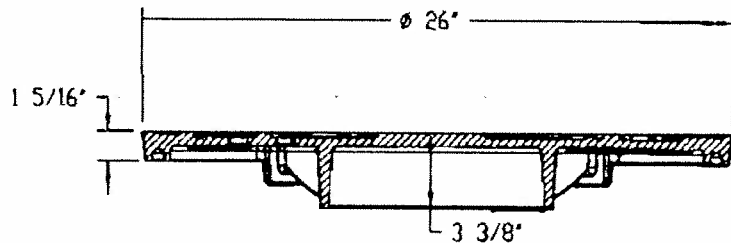
ERGO Cover



BOTTOM VIEW



SECTION A-A



SECTION B-B

DESIGN FEATURES

-MATERIALS
COVER: DUCTILE IRON (90-55-08)

-DESIGN LOAD: HEAVY DUTY
-OPEN AREA: N/A
-COATING: UNDIPPED
- DESIGNATES MACHINED SURFACE

CERTIFICATION

-ASTM A538
-COUNTRY OF ORIGIN: USA

DWSD APPROVAL:

R. Singley

DATE:

04/16/14



CITY OF DETROIT
CITY ENGINEERING DIVISION
DPW

DWSD MANHOLE
ERGO COVER

APPROVED:

repeated 4/16/14
ENGINEER OF STREETS
4/16/14
CITY ENGINEER

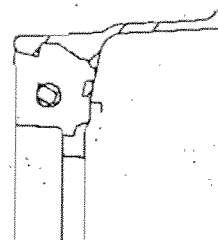
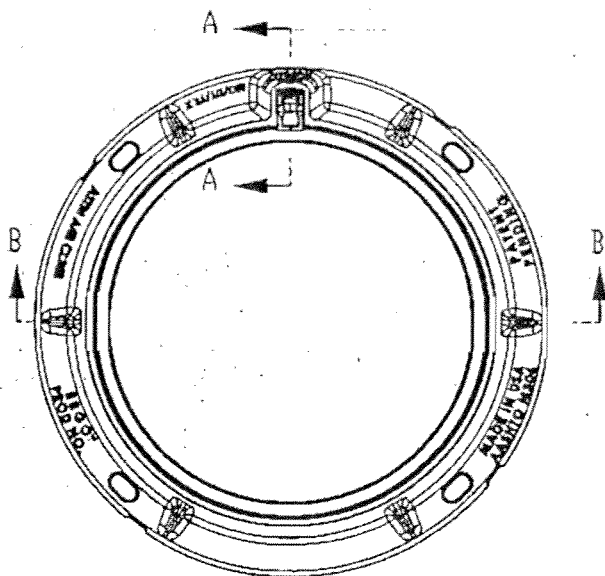
SHEET 1 OF 1

DETAIL STD. No.

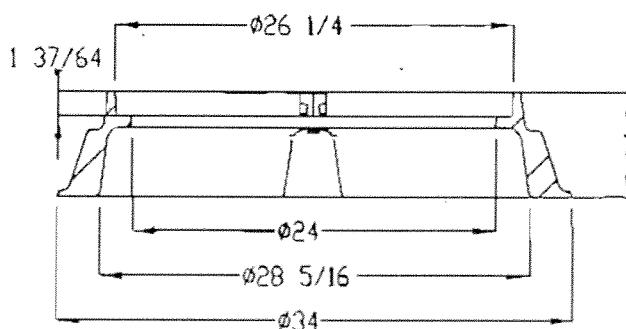
DRAWING No. 112

DRAWN BY: N.Y. SANTOS

DATE: 01/5/2014



SECTION A-A
SCALE 1 : 6



SECTION B-B

DESIGN FEATURES

-MATERIALS

FRAME: DUCTILE IRON (70-50-05)

-DESIGN LOAD: HEAVY DUTY

-OPEN AREA: N/A

-COATING: UNDIPPED

- / DESIGNATES MACHINED SURFACE

CERTIFICATION

-ASTM A536

-COUNTRY OF ORIGIN: USA

DWSD APPROVAL:

R. Singlet

DATE:

04/16/14



CITY OF DETROIT
CITY ENGINEERING DIVISION
DPW

DWSD MANHOLE
FRAME

APPROVED:

updated 4/16/14
ENGINEER OF STREETS
[Signature] 4/16/14
CITY ENGINEER

SHEET 1 OF 1

DETAIL STD. No.

DRAWING No. 113

DRAWN BY: M.Y. SANTOS

DATE: 0/15/2014

NON-SKID DIAMOND
PATTERN SURFACE

ALL LETTERING TO
BE (0.25") HIGH
AND FLUSH WITH SUR-
FACE OF COVER.

P.L.D. PATTERN NO. 2A

A.S.T.M. CLASS 30 GRAY IRON

APPROX. WT. 145 LBS.

STREET TYPE COVER

TO BE USED IN STREETS & DRIVES

SECTION "E-E"

SECTION "F-F"

SECTION "D-D".

INTERSECTIONS

4' Edge to Edge

Stop Bar is 18" wide

Point 10' Space 30'

Slant Lining of Stop Bar

BYCL

6" Width OK if painted as part of an intersection

5' Space 3' Point

End Stop Bar here unless the Center Lane is used for reversible flow.

6" Wide Line

5'

Cross walks to be located as shown on intersection drawing and Stop Bars located from the cross walk unless indicated otherwise on the drawing.

Symbol Legend

O "ONLY"

Stand (yellow)

See Sheet 2 for Center Left Turn Lane detail

LANING

NOTES

1. All lining shown is 4" and 0.015" thick
2. All paint is white unless specified otherwise
3. All Q are yellow

10'

30'

Yellow Skip Q is 10' point and 30' space

Double Yellow Q

4" Space edge to edge

NOTE

Do not vary unless approved by the Engineer of Signs and Markings.



CITY OF DETROIT
DEPARTMENT OF
TRANSPORTATION
PLANNING & TRAFFIC ENGINEERING

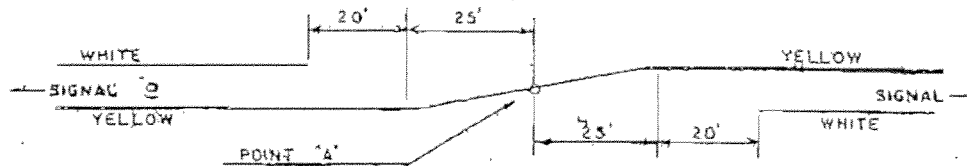
FIELD MARKING STANDARDS

1 of 4

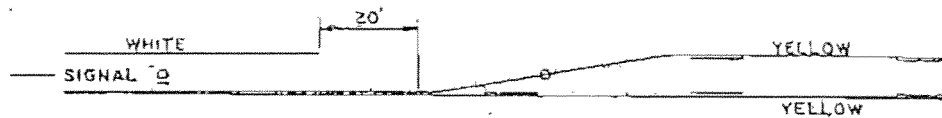
DRAWN A. L. Walker
SCALE None
DATE March 30, 1978

NO. SG-50

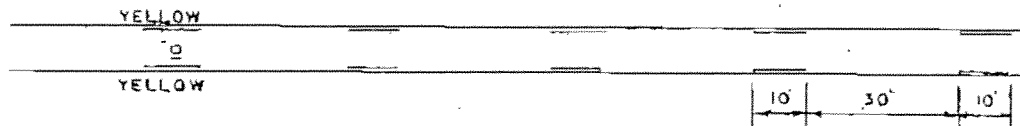
CENTER LEFT TURN LANE CROSSOVER DETAILS



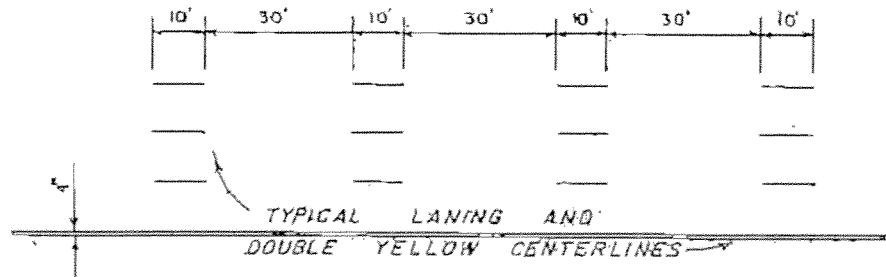
BETWEEN TWO SIGNALIZED INTERSECTIONS



BETWEEN SIGNALIZED AND NON-SIGNALIZED INTERSECTIONS



BETWEEN TWO NON-SIGNALIZED INTERSECTIONS



Notes:
Point 'A' is located mid-block unless otherwise noted.
All lane lines and centerlines begin or end at solar-
sectional stop bars unless otherwise noted.



CITY OF DETROIT
DEPARTMENT OF
TRANSPORTATION

PLANNING & TRAFFIC ENGINEERING

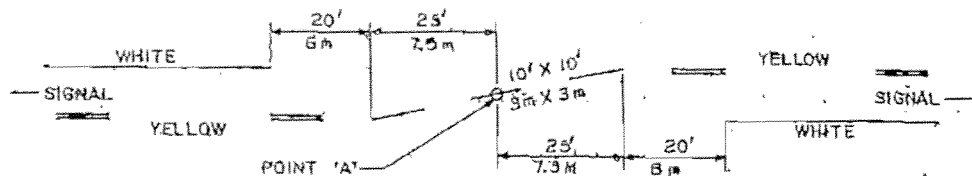
FIELD MARKING
STANDARDS

2 of 4

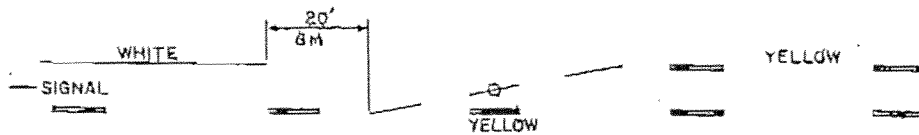
DRAWN A.L. Walker
SCALE 1" = 30'
DATE March 27, 1978

NO. SG-50

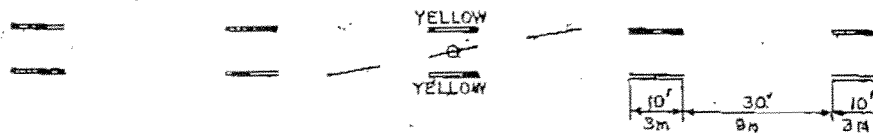
LEFT TURN & REVERSIBLE CENTER LANE DETAILS



BETWEEN TWO SIGNALIZED INTERSECTIONS



BETWEEN SIGNALIZED AND NON-SIGNALIZED INTERSECTIONS



BETWEEN TWO NON-SIGNALIZED INTERSECTIONS

REVISED 1-24-97 48

METRIC SCALE 25 TO 11 810



CITY OF DETROIT
DEPARTMENT OF
TRANSPORTATION
Transportation Engineering

FIELD MARKING
STANDARDS

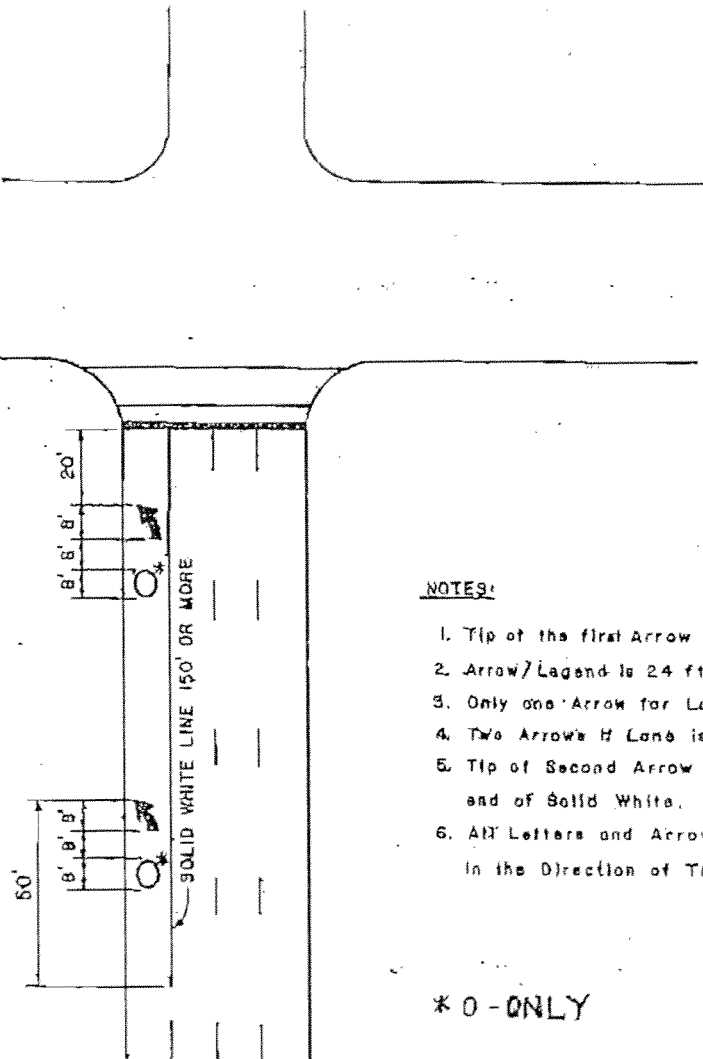
DRAWN Dennis R. Ellis
SCALE 1" = 30'
DATE 8 June 81

NO. SG-50

3 of 4

YELLOW POST 1/2" DIA

SYMBOLS



NOTES:

1. Tip of the first Arrow 20 ft. from Stop Bar.
2. Arrow/ Legend is 24 ft. long.
3. Only one Arrow for Lanes less than 150 ft.
4. Two Arrows if Lane is 150 ft. or more.
5. Tip of Second Arrow is located 80 ft. from end of Solid White.
6. All Letters and Arrows are White and read in the Direction of Travel.

* O - ONLY

BRUNING 7/8/87 FORM 18-1230



CITY OF DETROIT
DEPARTMENT OF
TRANSPORTATION
Transportation Engineering

FIELD MARKING STANDARDS

4 of 4

DRAWN E. W. Ryluoh
SCALE 1" = 40'
DATE Sept. 27, 1991

NO. S6-50